1987

SERVICE MANUAL

FISHER®

AD-840

Digital Compact Disc Player

AD840

U.S.

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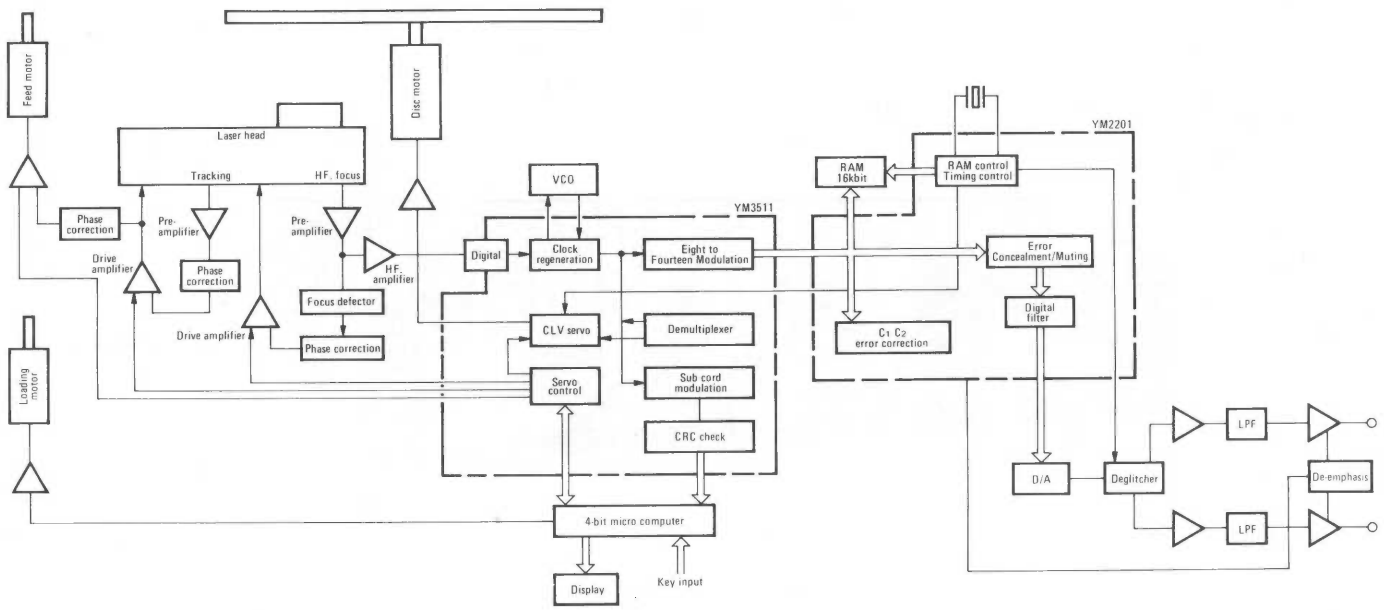
The Circuit Diagram and the P.C.B. Layout are separately attached.

FUNCTIONAL BLOCK DIAGRAM



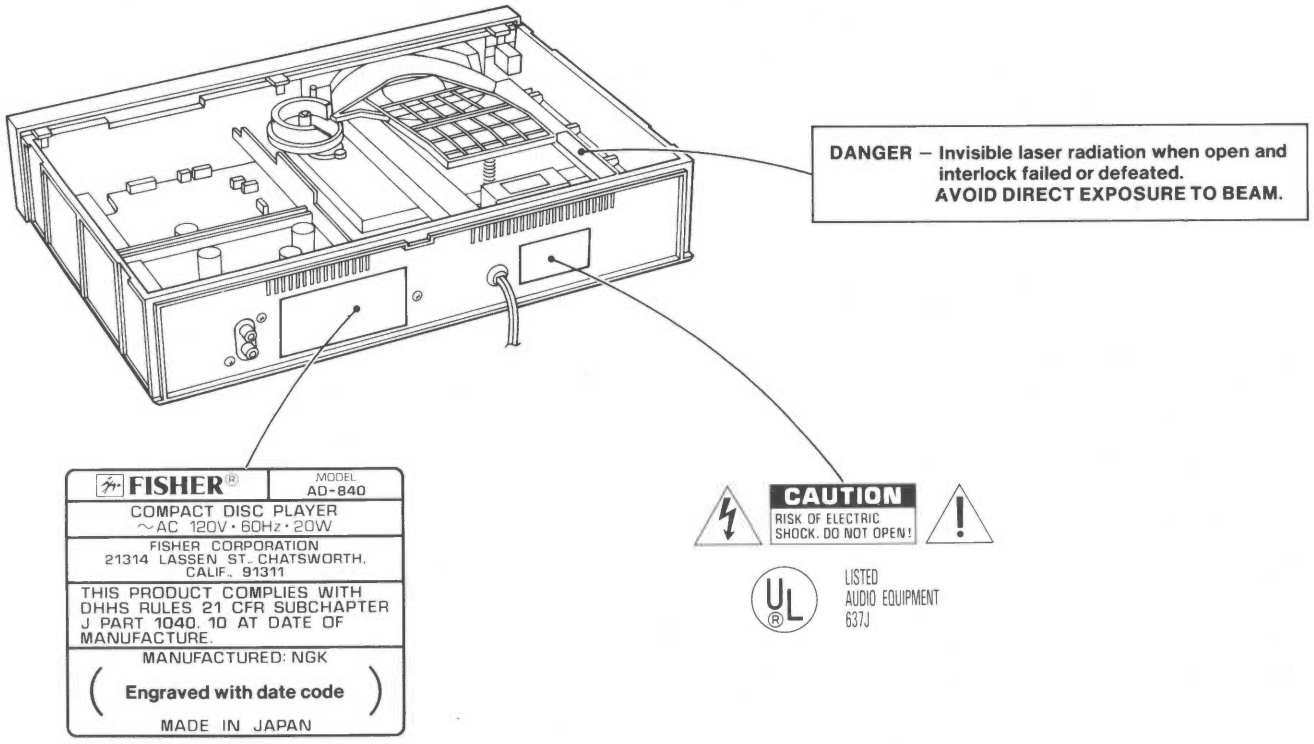
SPECIFICATIONS

DIGITAL COMPACT DISC PLAYER	AD-840
AUDIO CHARACTERISTICS	
Frequency Response	5 Hz – 20 kHz, ±0.5 dB
Harmonic Distortion	Less than 0.004 % (1 kHz)
Dynamic Range	More than 95 dB
Wow and Flutter	Unmeasurable
Channel Separation	More than 90 dB (1 kHz)
Output Voltage max.	2 Vrms
FUNCTIONS	
Instant Program Selection	Sequential, with F-FWD/SKIP and F-BACK/SKIP buttons
High-Speed Fast Forward/Back	2 speed fast forward/back with sound, high-speed search in pause
Remaining Time Display	With CHECK/REMAIN TIME button
Program Functions	23 selections, total time display; (display in accending order during playback)
Repeat	All selections or all programmed selections.
Reset	Press STOP button twice
Pause	Each selection
Disc Loading	Motor driven horizontal loading
DIGITAL SIGNAL PROCESSING	
Optical Pickup	3-beam laser
Error Correction	CIRC
Sampling Frequency	44.1 kHz
D/A Conversion	16-bit linear
Filter	Digital filter + (7-pole LC filter)
GENERAL	
Power Requirements (50/60 Hz)	120 V AC ±10 %, 20 Watts
Dimensions (W x H x D)	15-3/4" x 3-1/2" x 11-3/8"
Weight (approx.)	8.8 lbs.

Because its products are subject to continuous improvement, Fisher Corporation reserves the right to modify product designs and specifications without notice and without incurring any obligation.

SAFETY CERTIFICATION

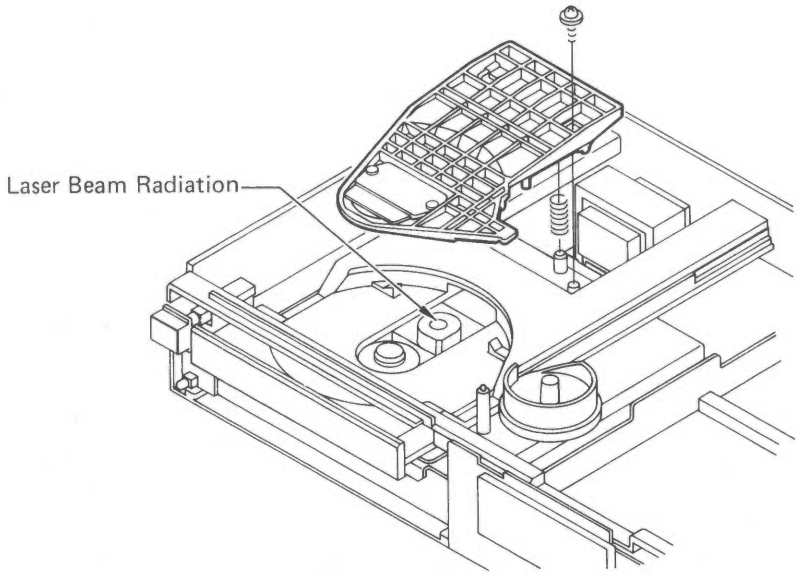
This Compact Disc Player is made and tested to meet exacting safety standards. It meets UL and FCC requirements and complies with safety performance standards of the U.S. Department of Health and Human Services.


DANGER – Invisible laser radiation when open and interlock failed or defeated.
AVOID DIRECT EXPOSURE TO BEAM.
FISHER
MODEL AD-840
COMPACT DISC PLAYER
~AC 120V • 60Hz • 20W
FISHER CORPORATION
21314 LASSEN ST., CHATSWORTH, CALIF., 91311
THIS PRODUCT COMPLIES WITH DHHS RULES 21 CFR SUBCHAPTER J PART 1040. 10 AT DATE OF MANUFACTURE.
MANUFACTURED: NGK
Engraved with date code
MADE IN JAPAN
CAUTION
RISK OF ELECTRIC SHOCK. DO NOT OPEN!
LISTED
AUDIO EQUIPMENT
637J

CAUTION – USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

THE COMPACT DISC PLAYER SHOULD NOT BE ADJUSTED OR REPAIRED BY ANYONE EXCEPT PROPERLY QUALIFIED SERVICE PERSONNEL.

LASER BEAM RADIATION SPOT

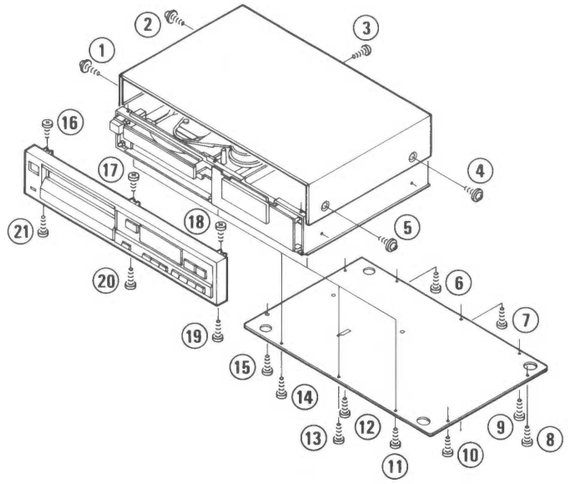


Laser Diode Properties
Material: Ga-Al-As
Wavelength: 765 – 795 nm (25°C)
Laser Output: Continuous Wave max. 0.4 mW

DISSASSEMBLY PROCEDURES

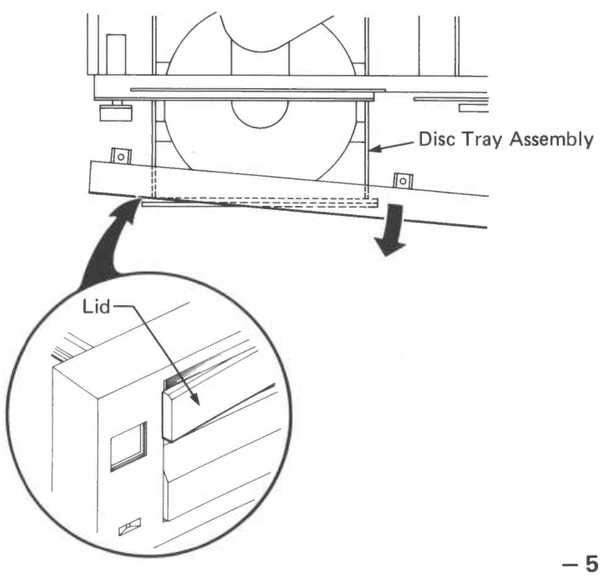
Removal of Cover
1. Remove five screws (1 ~ 5) securing the cover and lift the cover upward.

Removal of Plate Bottom
1. Remove ten screws (6 ~ 15) securing the plate bottom.



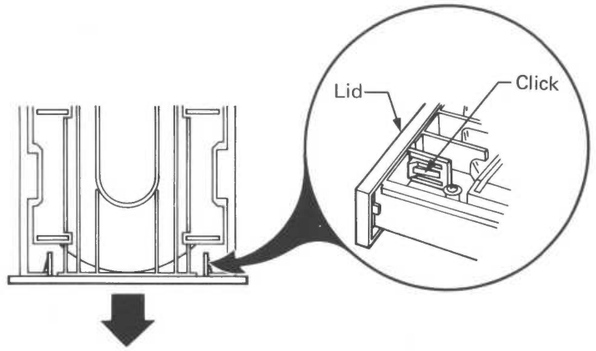
Removal of Front Panel
1. Remove six screws (16 ~ 21) securing the front panel.
2. Hand-rotate the cam and pull out the Disc Tray Assembly halfway toward you.
3. Remove the front panel after making its way through under the lid as illustrated.

Note:
Since there is almost no clearance between the opening on the front panel and the lid, carefully perform the removal work. If it is very hard to remove the front panel through the lid, first remove the lid, and then the front panel by following the procedures entitled "Removal of Lid".



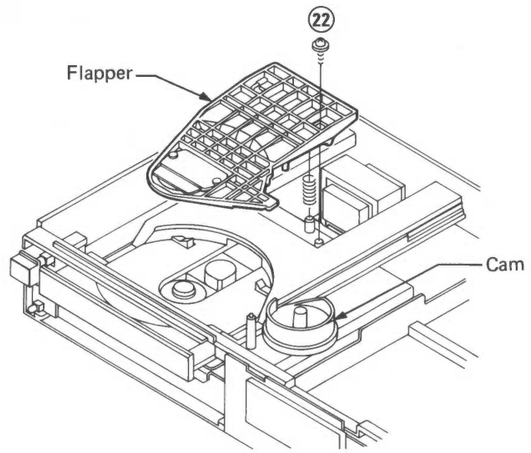
Removal of Lid
1. After removing the cover, hand-rotate the cam and pull out the Disk Tray Assembly halfway toward you.
2. Push the click on the lid inward from the back of the Disc Tray Assembly and remove the lid by pulling it in the direction of the arrow.

Caution:
Be sure to push only the click section because the frame around the click is very fragile.



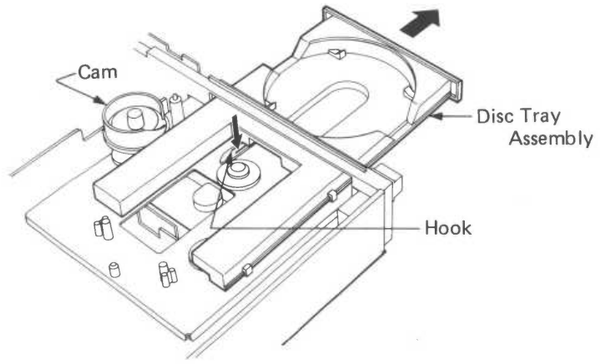
Removal of Disc Tray Assembly
1. After removing the cover, remove a screw (22) securing the flapper, and then the flapper.

Note:
When the screw is removed, pay due caution not to make the flapper pop up by the force of the spring.

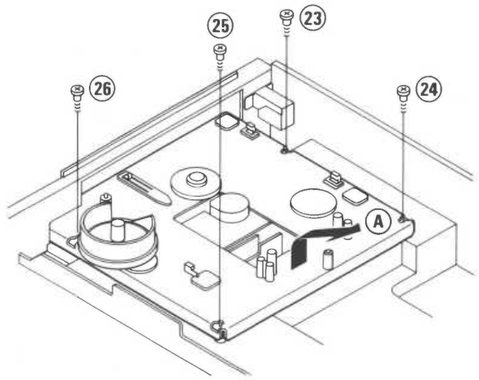


2. Hand-rotate the cam and pull out the Disc Tray Assembly in the direction of the arrow.

3. While pushing the hook in the direction of the arrow, pull out the Disc Tray Assembly from the cabinet.

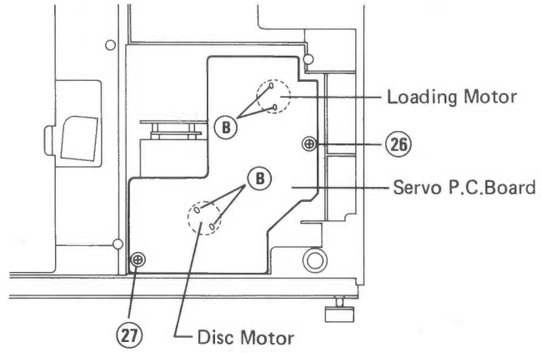


Removal of Disc Mechanism
1. After removing the Disc Tray Assembly, remove four screws (23 ~ 26) securing the disc mechanism. Then, lift and pull the section as marked (A) in the direction of the arrow to remove the mechanism.

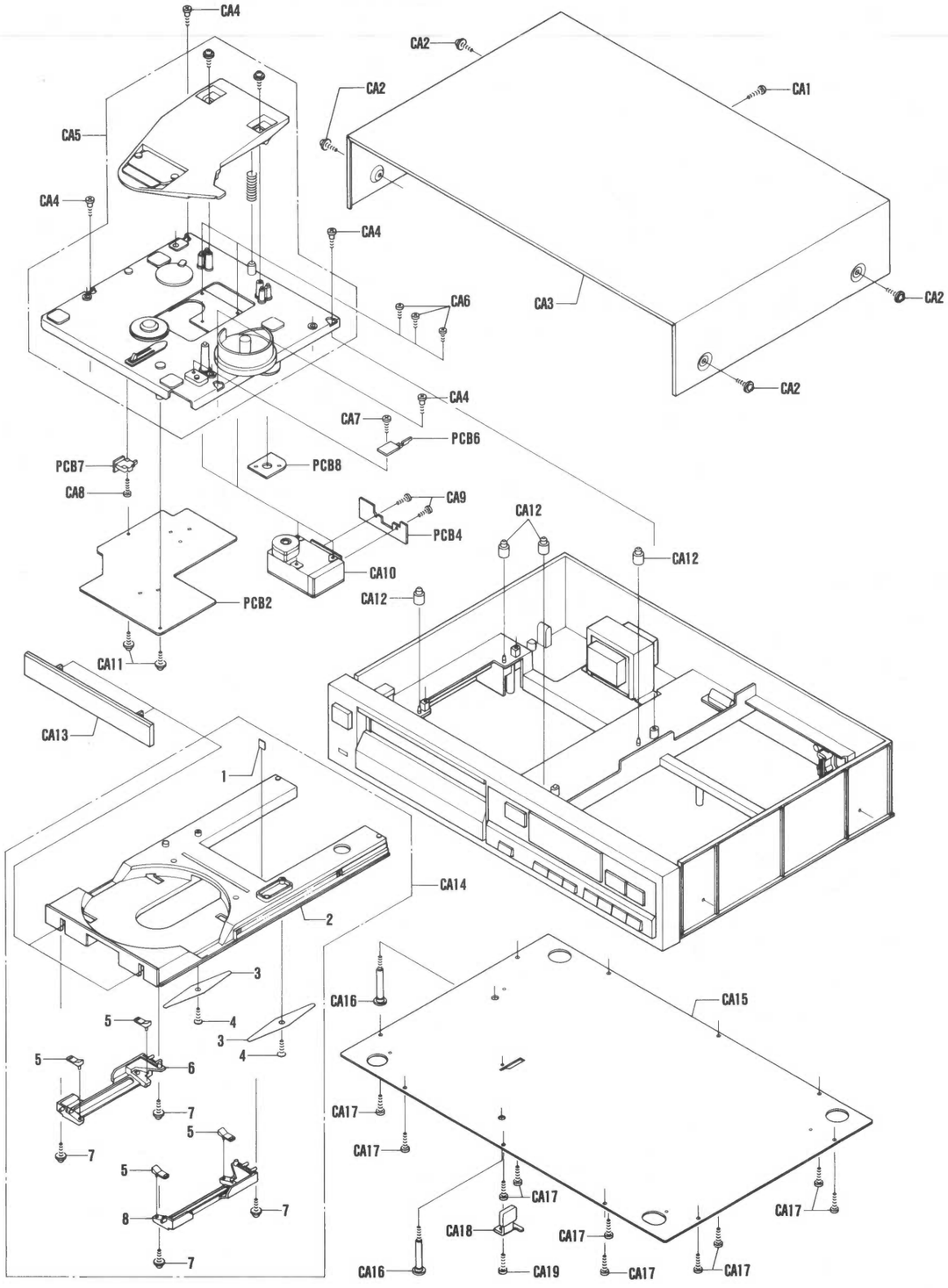


Removal of Servo P.C.Board
1. After removing the plate bottom, remove two screws (26 and 27) securing the Servo P.C.Board.

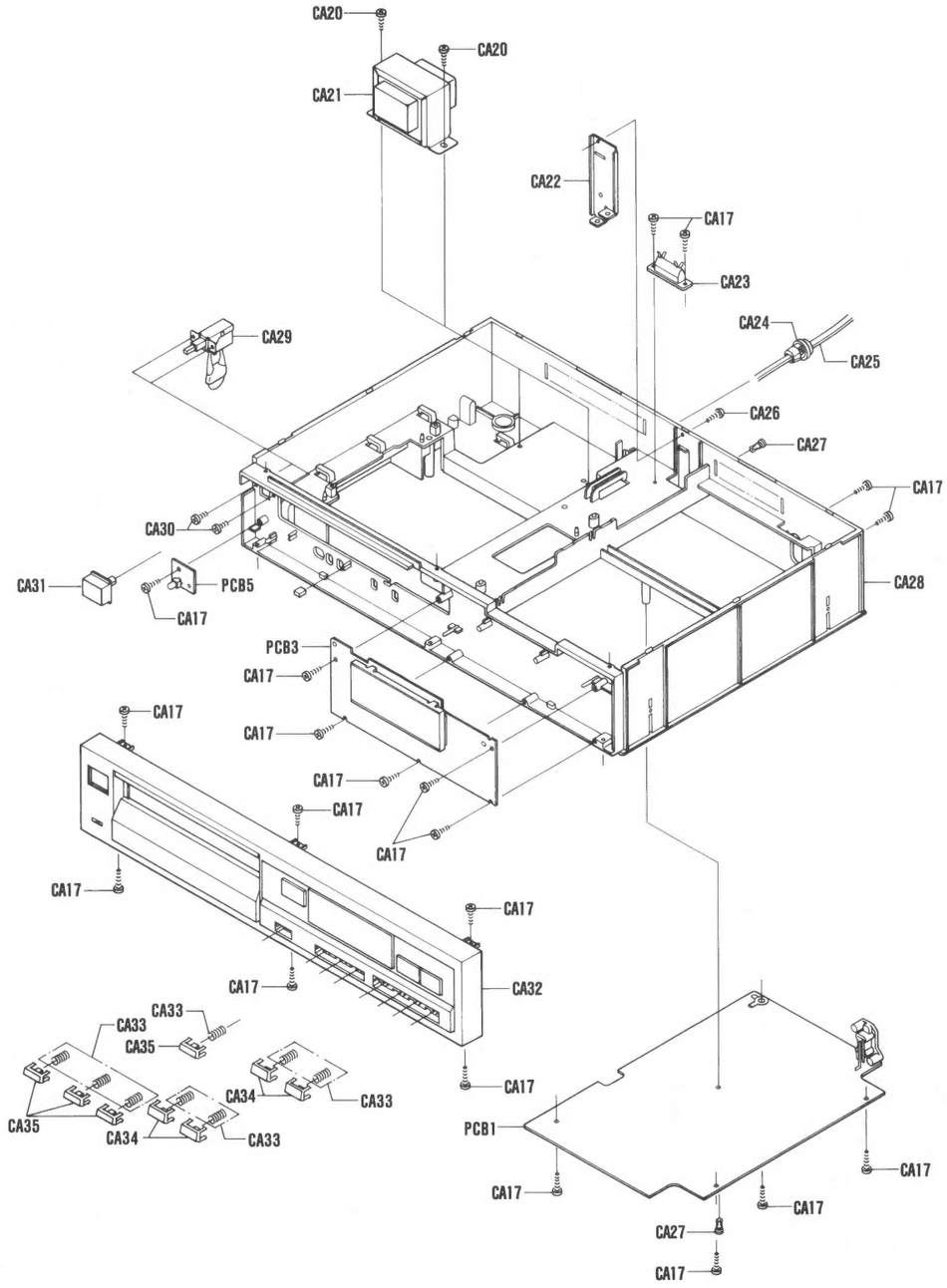
2. Unsolder the disc motor and loading motor terminals (B), and then remove the Servo P.C.Board.



CABINET & CHASSIS EXPLODED VIEW (1)



CABINET & CHASSIS EXPLODED VIEW (2)



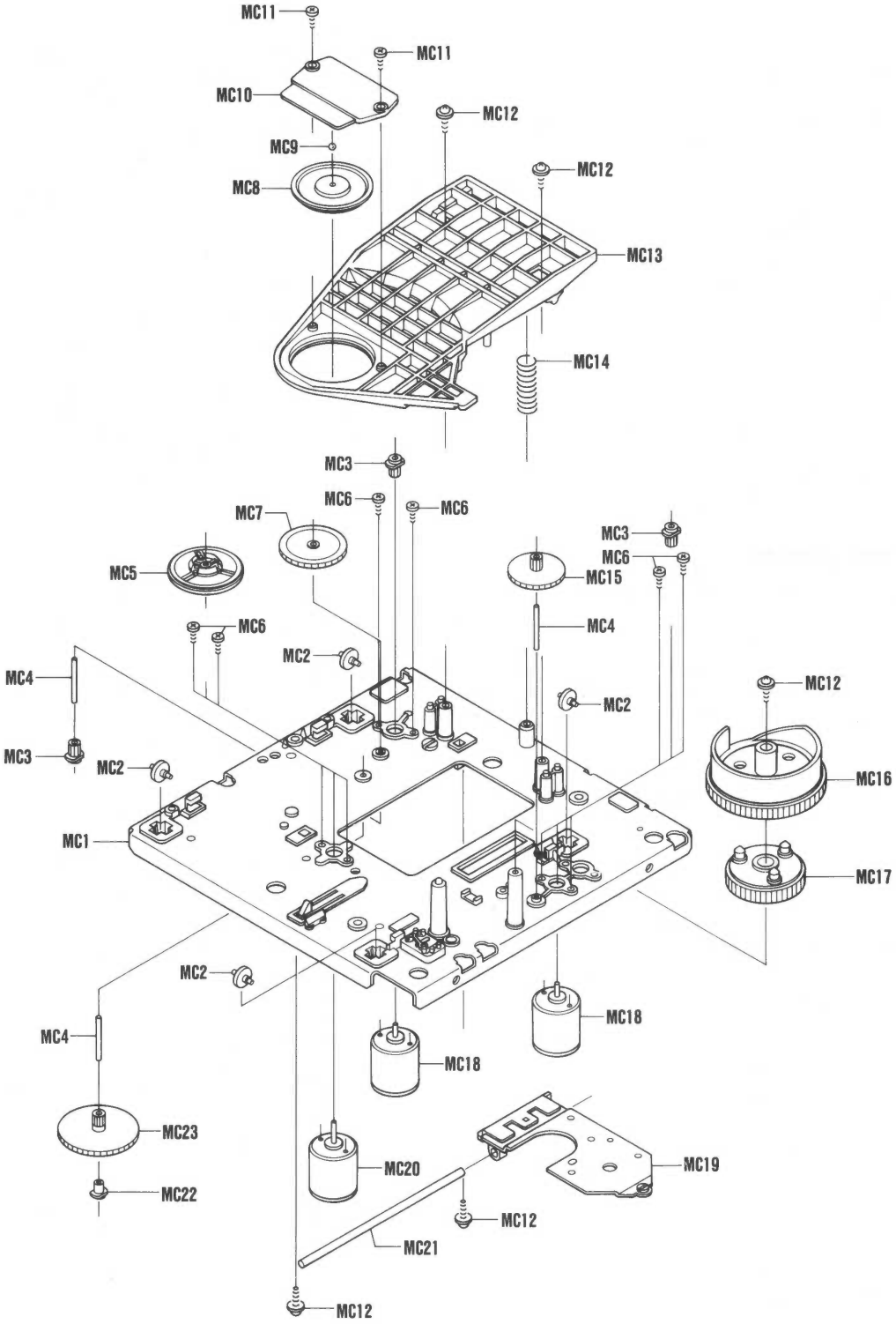
CABINET & CHASSIS PARTS LIST

Ref. No.	Part No.	Description	Q'ty
	PACKAGE		
	141 6 1139 97700	Export Carton (Silver)	1
	141 6 1139 97701	Export Carton (Black)	1
	141 6 2519 19190	Poly Cover	1
	141 6 3119 24600	Pad, Left	1
	141 6 3119 24700	Pad, Right	1
	141 6 3229 01200	Protector Sheet	1
	ACCESSORIES		
	4 2369 74130	Plug Cord	1
	131 6 2719 10801	Bag Fan	1
	131 6 4159 34100	Notes	1
	131 6 4319 10802	Service Station List	1
	131 6 4519 14400	Warranty Card	1
	131 6 4939 00200	Customer Card	1
	142 6 4119 31986	Explanatory Booklet	1
	CABINET		
	141 6 4159 00618	Notes	1
	141 6 4419 23478	Label(Control Tag)	1
	141 6 4559 03300	Serial No. Sheet	5
	131 2 7103 46700	Label(UL Caution) (Black Only)	1
	131 6 4159 39400	Notes(Danger) (Black Only)	1
	141 2 1449 61400	SEA Name Plate (Silver Only)	1
	141 2 1449 61600	Name Plate	1
	141 6 4729 37436	Mark Caution (Silver Only)	1
	141 6 4729 37437	Mark Caution (Silver Only)	1
	141 6 4729 37445	Label Caution	1
	141 6 4729 37446	Label Caution	1
CA1	141 2 4219 34700	Screw-B 3x10 FCM3-BI	1
CA2	141 2 4219 35100	PMSW B 3x12 FCRM3-BI (Silver)	4
CA2	141 2 4219 35200	PMSW B 3x12 FCRM3-BI (Black)	4
CA3	131 2 1410 31900	Cover (Silver)	1
CA3	131 2 1410 31901	Cover (Black)	1
CA4	141 2 4219 34000	Screw	4
CA5	141 0 2919 00600	DM-1 Unit	1
CA6	141 2 4219 35000	BMS 2.6x6 FCM3-BI	3
CA7	141 2 4219 34600	BTS P 2.6x8 ZMC2-Y	1
CA8	141 2 4219 34400	BTS P 2x10 ZMC2-Y	1
CA9	141 2 4219 35500	Screw	2
CA10	134 0 4009 03800	Pickup Assy	1
CA11	141 2 4219 34500	BWTS P 3x8 FCM3-BI	2
CA12	141 2 4459 34500	Rubber Dunper	4
CA13	131 2 1107 27200	Lid (Tray)	1
CA14	141 0 7319 28600	Disk Tray Assy	1
1	141 2 4459 34700	Cushion Rubber	1
2	141 2 7319 64000	Tray	1
3	141 2 8539 53400	SP Rifter	2
4	141 2 4219 35600	FTS 3x8 ZMC2-Y	2
5	141 2 4459 34600	Disk Pad	4
6	141 2 7439 44800	Rifter (R)	1
7	141 2 4219 35700	BW P 3x8 ZMC2-Y	4
8	141 2 7439 44900	Rifter (L)	1
CA15	131 2 1105 30700	Plate Bottom	1
CA16	141 2 4219 33900	Screw	3
CA17	141 2 4219 34200	BTS P 3x10 FCM3-BI	29
CA18	141 2 3519 72000	Plate Antivibration	1
CA19	141 2 4219 34900	BTS B 3x8 FCM3-BF-P	1
CA20	141 2 4219 34100	BTS P 4x12 ZMC2-Y	2
CA21	⚠ 4 2519 74020	Power Trans	1
CA22	4 2379 70890	Ground Plate	1
CA23	4 2379 70880	Terminal 2P	1
CA24	141 2 3899 13800	Cord Stopper	1
CA25	⚠ 4 2439 72360	Power Cord	1
CA26	141 2 4219 34800	BTS B 3x8 ZMC2-Y	1
CA27	141 2 4629 02100	Rivet	2
CA28	141 0 3119 24000	Main Chassis Assy (Silver)	1
CA28	141 0 3119 24300	Main Chassis (Black)	1
CA29	4 2319 77080	Power SW Assy	1
	⚠ 4 2239 71940	Ceramic [C301] 0.01μF	1
	⚠ 4 2319 77110	Switch Power [SW116]	1
⚠	141 2 3229 48700	Condenser Cover	1
CA30	141 2 4219 34300	BMS 3x8 FCM3-BI	2
CA31	141 2 1659 30500	Knob (Silver)	1
CA31	141 2 1659 30501	Knob (Power) (Black)	1
CA32	131 0 1016 43900	Panel Decorate Assy (Silver)	1
CA32	131 0 1016 43901	Panel Decorate Assy (Black)	1
CA33	131 2 5101 24000	Spring	8
CA34	141 2 1659 30900	Knob	4
CA35	141 2 1659 30800	Knob	4
PCB1	141 0 1939 04950	Main P.C.B. Assy	1
PCB2	141 0 1939 04960	Servo P.C.B. Assy	1
PCB3	141 0 1939 04970	Display P.C.B. Assy	1
PCB4	141 0 1939 04980	Auto Laser Control P.C.B. Assy	1
PCB5	141 0 1939 04990	LED P.C.B. Assy	1
PCB6	141 0 1939 05000	Load Rimit Switch P.C.B. Assy	1
PCB7	141 0 1939 05010	Feed Start Switch P.C.B. Assy	1
PCB8	141 0 1939 05020	Load Motor P.C.B. Assy	1

PRODUCT SAFETY NOTICE

Each precaution in this manual should be followed during servicing. Components identified with the IEC symbol ⚠ in the parts list and the schematic diagram designate components in which safety can be of special significance. When replacing a component identified with ⚠, use only the replacement parts designated, or parts with the same ratings of resistance, wattage or voltage that are designated in the parts list in this manual. Leakage-current or resistance measurements must be made to determine that exposed parts are acceptably insulated from the supply circuit before returning the product to the customer.

MECHANISM EXPLODED VIEW



MECHANISM PARTS LIST

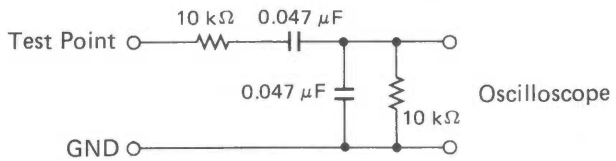
Ref. No.	Part No.	Description	Q'ty
	MECHANISM		
MC1	141 2 3119 22500	Outsert Chassis	1
MC2	141 2 8259 12300	Roller	4
MC3	141 2 6619 05300	Pinion	3
MC4	141 2 7519 71800	Shaft S	3
MC5	141 2 5389 05100	Stabiraizer	1
MC6	141 2 4219 35500	BMS 2x5 ZMC2-Bl	8
MC7	141 2 5519 59300	C Gear	1
MC8	141 2 5229 00500	Tern Table	1
MC9	141 2 8259 12400	Steel Ball 2.5	1
MC10	141 2 5729 21700	Thrust Bearing	1
MC11	141 2 4219 35400	BTS P 2.6x5 ZMC2-Bl	2
MC12	141 2 4219 35300	BW P 3x8 ZMC2-Bl	5
MC13	141 2 3519 72100	Flapper	1
MC14	141 2 8559 09500	Spring	1
MC15	141 2 5519 59100	Idol Gear	1
MC16	141 2 5519 59000	Cam	1
MC17	141 2 5519 59200	Clutch	1
MC18	4 5279 71400	Roading Motor (Feed) [M102]	1
MC18	4 5279 71400	Roading Motor (Roading) [M103]	1
MC19	141 2 3169 25200	HB Outsert	1
MC20	4 5279 71390	Disk Motor [M101]	1
MC21	141 2 7519 71700	Shaft L	1
MC22	141 2 3899 14000	Bush	1
MC23	141 2 5519 58900	Drive Gear	1

ADJUSTMENT

Measuring Instruments Required

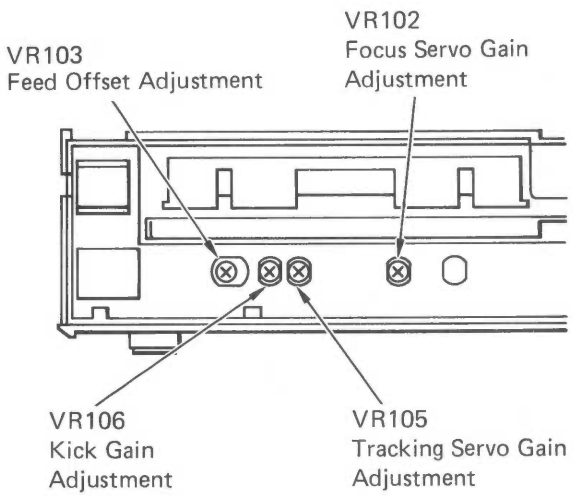
- DC VTVM (high input impedance DC voltmeter)
- AC VTVM (high input impedance AC voltmeter)
- Oscilloscope
- Frequency Generator
- Frequency Counter
- Compact Disc (music disc for general use)
- Bandpass Filter
  Connect the bandpass filter with the following circuit between the test points and the oscilloscope for the focus and tracking servo gain adjustments.

BPF



Before Adjustments

- Cut off power to the unit before the connection of each measuring instrument in the following adjustments.
- Set the ground point of a measuring instrument as close to a test point as possible.
- Refer to the illustration below for the adjusting volume locations.



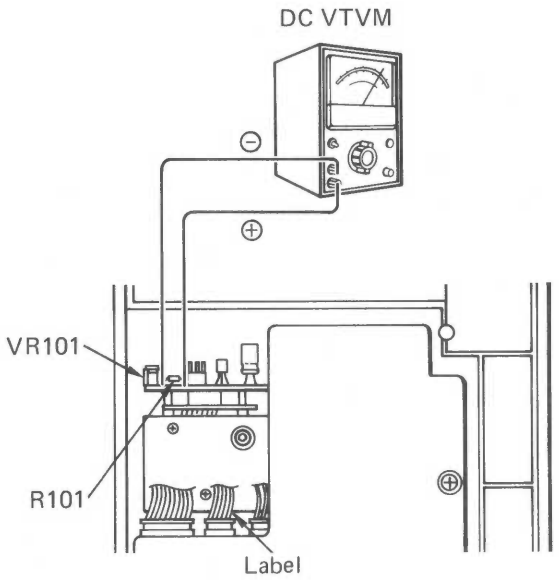
Laser Output Adjustment

1. Connect the DC VTVM across R101 on the Auto Laser Control P.C.Board. (Minus (–) side: nearer to VR101.)

2. Supply power to the unit and load the unit with the disc. Then, set the unit in the play mode.

3. Read the standard monitor current Imo written in the label attached on the side of the pickup. Adjust VR101, so that the indication V_L becomes the voltage gained by the following equation.

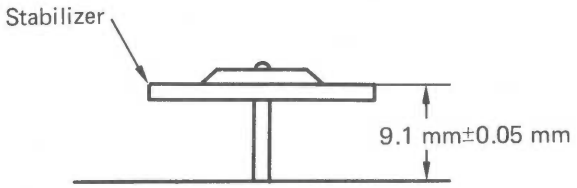
$$V_L\ (V) = Imo\ (mA) \times 2.2\ (k\Omega)$$



Stabilizer Height Adjustment

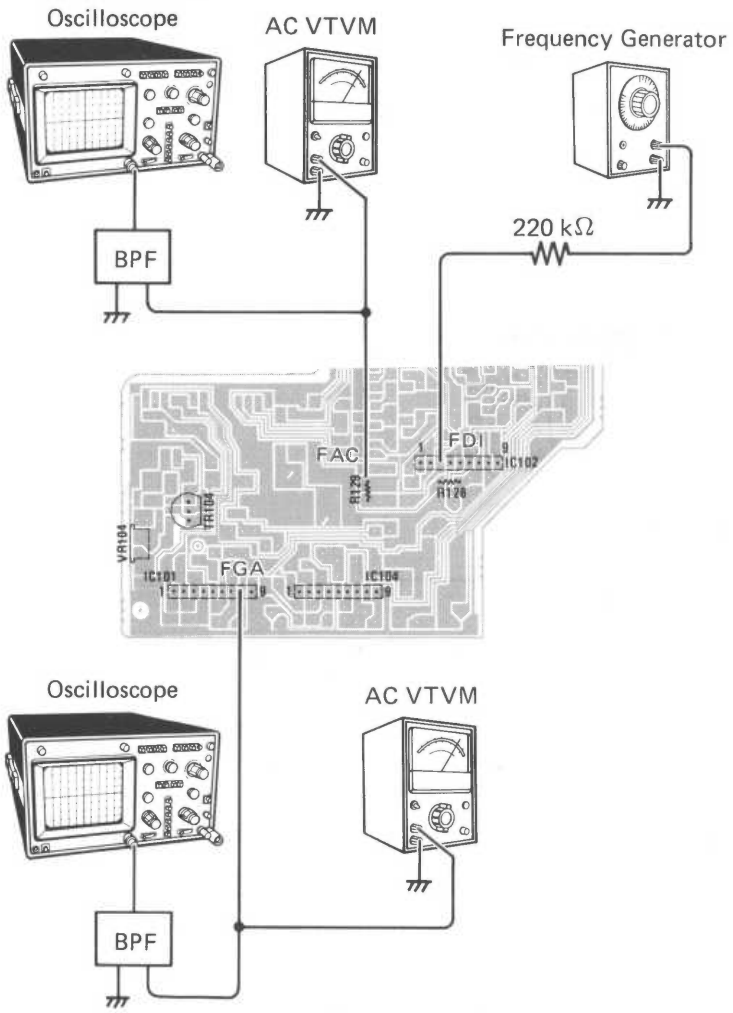
1. Remove the Disc Tray Assembly. (Refer to "Removal of Disc Tray Assembly".)

2. Set the clearance between the upper surface of the stabilizer and the chassis to 9.1 mm±0.05 mm.



Focus Servo Gain Adjustment

1. Connect the frequency generator through a resistance of 220 kΩ to FDI, and then the oscilloscopes with the bandpass filters and the AC VTVM's to FAC and FGA as illustrated.



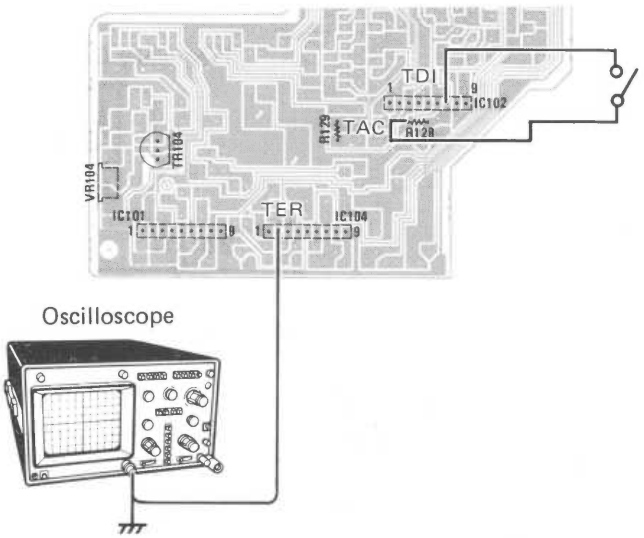
2. Supply power to the unit and load the unit with the disc. Then, set the unit in the play mode.

3. Set the output of the frequency generator to 1 kHz 1.5 Vrms.

4. Adjust VR102, so that the level of FGA increases +7 dB (about 2.2 times as much) to that of FAC.

Tracking Adjustment

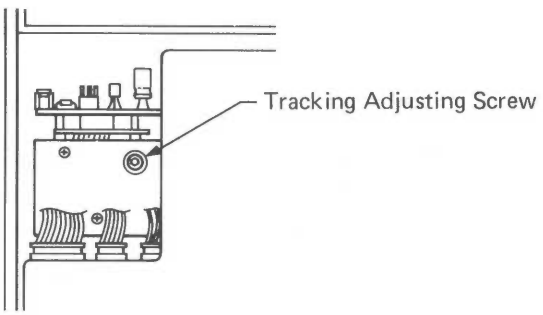
1. Connect the oscilloscope to TER as illustrated.



2. Supply power to the unit and set the unit in the play mode.

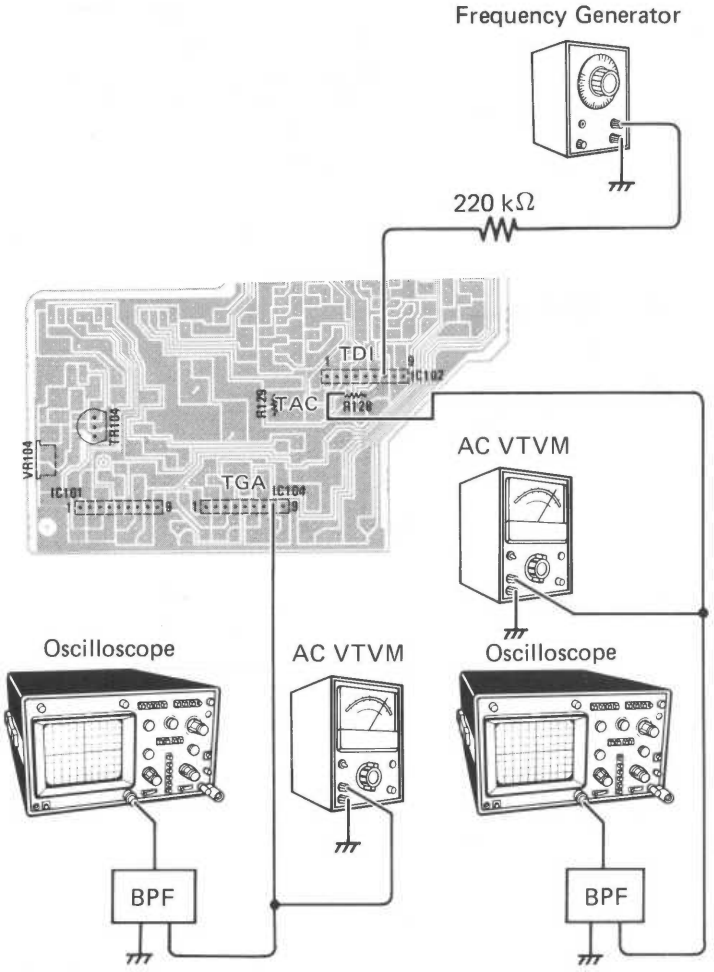
3. Short-circuit TDI and TAC during the play.

4. Turn the tracking adjusting screw until the maximum tracking error signal appears on the oscilloscope.
   Note:
   If the tracking error signal appears for more than 5 sec., the play mode is released by the microcomputer. Perform the adjustment in less than 5 sec.



Tracking Servo Gain Adjustment

1. Connect the frequency generator through a resistance of 220 kΩ to TDI, and then the oscilloscopes with the bandpass filters and the AC VTVM's to TAC and TGA as illustrated.



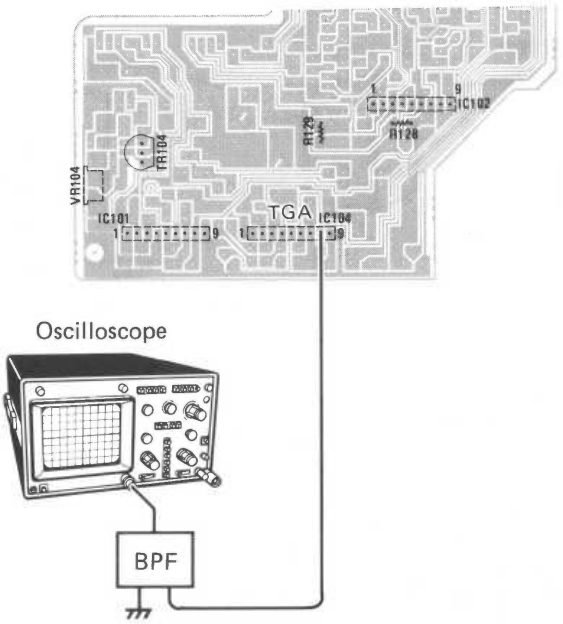
2. Supply power to the unit and load the unit with the disc. Then, set the unit in the play mode.

3. Set the output of the frequency generator to 1kHz, 20 mVrms.

4. Adjust VR105, so that the level of TGA increases +26 dB (about 20 times as much) to that of TAC.

Kick Gain Adjustment

1. Connect the oscilloscope through the bandpass filter to TGA as illustrated.

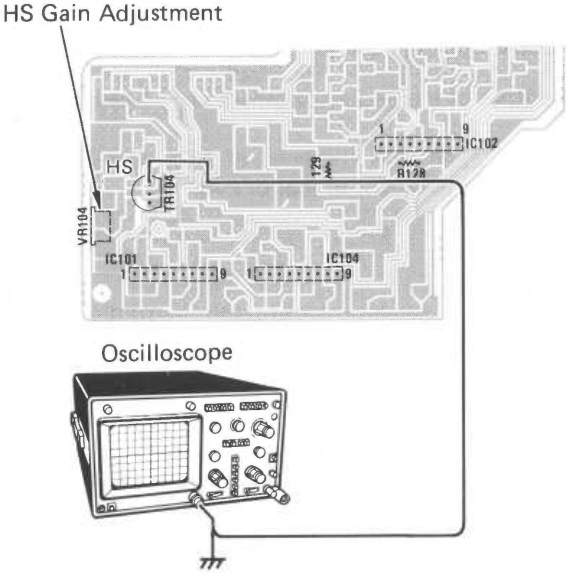


2. Supply power to the unit and load the unit with the disc. Then, set the unit in the play mode.

3. Keep pushing the FF or BF button for more than 3 sec. during the play and adjust VR106 until 10 pulses appear on the oscilloscope as illustrated.

Azimuth and HS Gain Adjustments

1. Connect the oscilloscope to HS as illustrated.

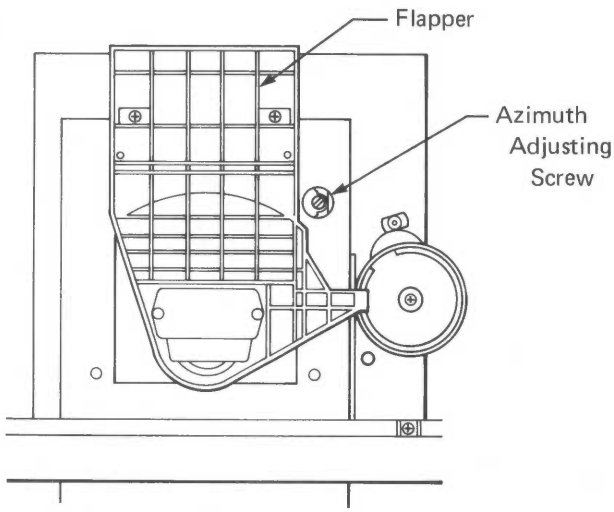


2. Remove the Disc Tray Assembly. (Refer to "Removal of Disc Tray Assembly".) Remount the flapper.

3. Lift the flapper with your hand and place the disc directly on the stabilizer.

4. Supply power to the unit and set the unit in the play mode.

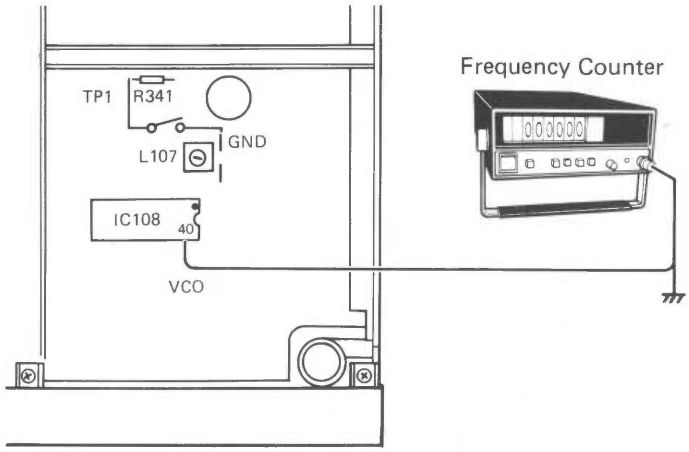
5. Turn the azimuth adjusting screw, so that the thin and clear lines of the eye pattern appear on the oscilloscope with the waveform in the maximum state.



6. Adjust VR104, so that the waveform of the eye pattern becomes 1.5 Vp-p.

VCO Adjustment

1. Connect the frequency counter to VCO and short-circuit TP1 and GND as illustrated.

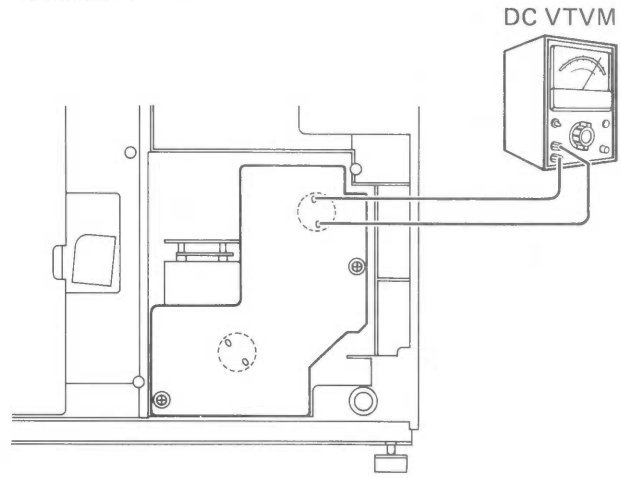


2. Supply power to the unit and adjust L107, so that the frequency counter reads 4.3218 MHz±20 kHz.

Feed Offset Adjustment

Keep the feed offset in the factory-adjusted condition and do not perform this adjustment unless necessary. Perform the following adjustment only when the unit does not function normally after the other adjustments.

1. Connect the DC VTVM to the feed motor terminals as illustrated.



2. Supply power to the unit and load the unit with the disc. Then, set the unit in the play mode.

3. Fix the pickup and push the FF and FB buttons. Adjust VR103, so that the absolute values of the feed motor valtage are equalized in each case.

4. Observe the waveform of HS and confirm that the eye pattern is fine and clear. If not, repeat Items 3 and 4 and adjust VR103, so that the absolute values of the feed motor voltage are equalized and the eye pattern becomes fine and clear.

PARTS LIST

Ref. No.	Part No.	Description	Q'ty
	MAIN P.C.B. ASSY		
PCB1	141 0 1939 04950	Main P.C.B. Assy	1
	4 2379 70900	Terminal 4P	1
	141 2 1419 19100	Label NA	1
	141 2 4569 09000	Washer	1
CN01	4 2369 74670	Plug 10P	1
CN02	4 2369 74660	Plug 6P	1
CN03	4 2369 74600	Plug 2P	1
CN04	4 2369 74650	Plug 4P	1
CN05	4 2369 74640	Plug 3P	1
CN06	4 2369 74630	Plug 2P	1
CN07	4 2369 74630	Plug 2P	1
CN08	4 2369 74660	Plug 6P	1
CN09	4 2369 74640	Plug 3P	1
CN10	4 2369 74670	Plug 10P	1
L101	4 2529 70240	Fiter Coil	1
L102	4 2529 70240	Fiter Coil	1
L103	4 2529 70250	Filter Coil	1
L104	4 2529 70250	Filter Coil	1
L105	4 2529 70260	Filter Coil	1
L106	4 2529 70260	Filter Coil	1
L107	4 2589 72500	OSC Coil	1
PJ101	4 2359 77550	Pin Jack 2P	1
XL101	4 2259 70700	Cristal Vibrator	1
XL102	4 2259 70690	Ceramic Vibrator	1
IC107	4 2069 70940	IC, NJM 4558	1
IC108	4 2069 73560	IC, YM3511 SVC	1
IC109	4 2069 70940	IC, NJM 4558	1
IC110	4 2069 73540	IC, NJM2043 S	1
IC111	4 2069 73550	IC, YM2201 SGP	1
IC112	4 2069 73530	IC, MSM6404 RS	1
IC113	4 2069 73480	IC, μPD4016-CX	1
IC114	4 2069 73470	IC, PCM53JP-V	1
IC115	4 2069 73620	IC, LA3170	1
IC116	4 2069 73620	IC, LA3170	1
IC117	4 2069 73390	IC, MN4053BP	1
IC118	4 2069 73440	IC, AN6557	1
TR113	4 2039 70430	Transistor, 2SC 1815 Y	1
TR114	4 2039 70430	Transistor, 2SC 1815 Y	1
TR115	4 2039 70430	Transistor, 2SC 1815 Y	1
TR116	4 2039 70430	Transistor, 2SC 1815 Y	1
TR117	4 2039 70430	Transistor, 2SC 1815 Y	1
TR118	4 2039 70680	Transistor, 2SA 1015 Y	1
TR119	4 2039 70680	Transistor, 2SA 1015 Y	1
TR120	4 2039 70680	Transistor, 2SA 1015 Y	1
TR121	4 2039 70430	Transistor, 2SC 1815 Y	1
TR122	4 2039 70430	Transistor, 2SC 1815 Y	1
TR123	4 2039 70680	Transistor, 2SA 1015 Y	1
TR124	4 2039 70430	Transistor, 2SC 1815 Y	1
TR125	4 2039 70430	Transistor, 2SC 1815 Y	1
TR126	4 2039 70430	Transistor, 2SC 1815 Y	1
TR127	4 2039 71710	Transistor, 2SB544	1
TR128	4 2039 71710	Transistor, 2SB544	1
TR129	4 2039 71750	Transistor, 2SC3225	1
TR130	4 2039 71750	Transistor, 2SC3225	1
TR131	4 2039 71810	Transistor, 2SD400	1
TR132	4 2039 70430	Transistor, 2SC 1815 Y	1
TR133	4 2039 71810	Transistor, 2SD400	1
TR134	4 2039 70680	Transistor, 2SA 1015 Y	1
TR135	4 2039 71710	Transistor, 2SB544	1
TR136	4 2039 70430	Transistor, 2SC 1815 Y	1
TR137	4 2039 71810	Transistor, 2SD400	1
TR138	4 2039 71720	Transistor, 2SB566 BCD	1
TR139	4 2039 71710	Transistor, 2SB544	1

Ref. No.	Part No.	Description			Q'ty
TR140	4 2039 71810	Transistor, 2SD400			1
TR141	4 2039 71710	Transistor, 2SB544			1
TR142	4 2039 71810	Transistor, 2SD400			1
TR143	4 2039 70680	Transistor, 2SA 1015 Y			1
TR144	4 2039 70680	Transistor, 2SA 1015 Y			1
TR145	4 2039 70950	Transistor, 2SC 2878 A			1
TR146	4 2039 70950	Transistor, 2SC 2878 A			1
TR147	4 2039 70950	Transistor, 2SC 2878 A			1
TR148	4 2039 70950	Transistor, 2SC 2878 A			1
TR149	4 2039 70430	Transistor, 2SC 1815 Y			1
D104	4 2029 73350	Diode, 1S133			1
D105	4 2029 73350	Diode, 1S133			1
D106	4 2029 73340	Diode, SVC211			1
D109	4 2029 73320	LED, LTZ-R17			1
D110	4 2029 73360	Zener Diode, HZ5.6EB2			1
D111	4 2029 73450	Diode, 1SR35-100A			1
D112	4 2029 73450	Diode, 1SR35-100A			1
D113	4 2029 73450	Diode, 1SR35-100A			1
D114	4 2029 73450	Diode, 1SR35-100A			1
D115	4 2029 73450	Diode, 1SR35-100A			1
D116	4 2029 73420	Zener Diode, HZS15EB1			1
D117	4 2029 73420	Zener Diode, HZS15EB1			1
D118	4 2029 73450	Diode, 1SR35-100A			1
D119	4 2029 73450	Diode, 1SR35-100A			1
D121	4 2029 73390	Zener Diode, MTZ7.5B			1
D122	4 2029 73350	Diode, 1S133			1
D123	4 2029 73350	Diode, 1S133			1
C114	4 2239 71850	Elect	100μF	10V	1
C118	4 2239 71920	Elect	2.2μF	50V	1
C119	4 2239 71760	Mylar	0.1μF	50V ±5%	1
C121	4 2239 71860	Elect	47μF	16V	1
C122	4 2239 71830	Elect	10μF	50V	1
C123	4 2239 71740	Mylar	0.068μF	50V	1
C124	4 2239 71860	Elect	47μF	16V	1
C125	4 2239 71760	Mylar	0.1μF	50V ±5%	1
C126	4 2239 71890	Elect	2200μF	16V	1
C127	4 2239 71620	Mylar	1000pF	50V ±5%	1
C128	4 2239 71620	Mylar	1000pF	50V ±5%	1
C129	4 2239 71830	Elect	10μF	50V	1
C130	4 2239 71770	Mylar	0.22μF	50V ±5%	1
C131	4 2239 71780	Mylar	0.33μF	50V ±5%	1
C132	4 2239 71810	BP	1μF	50V	1
C133	4 2239 71680	Mylar	1000pF	50V ±5%	1
C134	4 2239 71590	Ceram	100pF	50V ±10%	1
C135	4 2239 71670	Mylar	470pF	50V ±5%	1
C136	4 2239 71580	Ceram	220pF	50V ±10%	1
C137	4 2239 71800	Mylar	3300pF	50V	1
C138	4 2239 71680	Mylar	1000pF	50V ±5%	1
C139	4 2239 71570	Ceram	0.047μF	50V +80,-20%	1
C140	4 2239 71730	Mylar	0.01μF	50V ±5%	1
C141	4 2239 71820	Elect	220μF	6.3V	1
C142	4 2239 71600	Ceram	27pF	50V ±5%	1
C143	4 2239 71600	Ceram	27pF	50V ±5%	1
C144	4 2239 71900	Elect	1μF	50V	1
C148	4 2239 71820	Elect	220μF	6.3V	1
C149	4 2239 71860	Elect	47μF	16V	1
C150	4 2239 71890	Elect	2200μF	16V	1
C151	4 2239 71540	Ceram	1000pF	50V ±10%	1
C152	4 2239 71880	Elect	220μF	16V	1
C153	4 2239 71570	Ceram	0.047μF	50V +80,-20%	1
C154	4 2239 71890	Elect	2200μF	16V	1
C155	4 2239 71890	Elect	2200μF	16V	1
C156	4 2239 71630	Mylar	0.01μF	50V ±10%	1
C157	4 2239 71630	Mylar	0.01μF	50V ±10%	1

PARTS LIST (Continued)

Ref. No.	Part No.	Description				Q'ty
C158	4 2239 71880	Elect	220μF	16V		1
C159	4 2239 71880	Elect	220μF	16V		1
C160	4 2239 71860	Elect	47μF	16V		1
C161	4 2239 71860	Elect	47μF	16V		1
C162	4 2239 71910	Elect	1000μF	25V		1
C163	4 2239 71910	Elect	1000μF	25V		1
C164	4 2239 71880	Elect	220μF	16V		1
C165	4 2239 71830	Elect	10μF	50V		1
C166	4 2239 71570	Ceram	0.047μF	50V	+80,-20%	1
C167	4 2239 71650	Mica	22pF	500V	±5%	1
C168	4 2239 71650	Mica	22pF	500V	±5%	1
C169	4 2239 71670	Mylar	470pF	50V	±5%	1
C170	4 2239 71670	Mylar	47pF	50V	±5%	1
C171	4 2239 71660	Mica	47pF	500V	±5%	1
C172	4 2239 71660	Mica	47pF	500V	±5%	1
C173	4 2239 71670	Mylar	470pF	50V	±5%	1
C174	4 2239 71670	Mylar	470pF	50V	±5%	1
C175	4 2239 71690	Mylar	1200pF	50V	±5%	1
C176	4 2239 71690	Mylar	1200pF	50V	±5%	1
C177	4 2239 71700	Mylar	1800pF	50V	±5%	1
C178	4 2239 71700	Mylar	1800pF	50V	±5%	1
C179	4 2239 71710	Mylar	2000pF	50V	±5%	1
C180	4 2239 71710	Mylar	2000pF	50V	±5%	1
C181	4 2239 71600	Ceram	27pF	50V	±5%	1
C182	4 2239 71600	Ceram	27pF	50V	±5%	1
C183	4 2239 71720	Mylar	6800pF	50V	±5%	1
C184	4 2239 71720	Mylar	6800pF	50V	±5%	1
C185	4 2239 71640	Elect BP	4.7μF	25V		1
C186	4 2239 71640	Elect BP	4.7μF	25V		1
C187	4 2239 71900	Elect	1μF	50V		1
C188	4 2239 71820	Elect	220μF	6.3V		1
C189	4 2239 71840	Elect	470μF	6.3V		1
C192	4 2239 71890	Elect	2200μF	16V		1
C193	4 2239 71630	Mylar	0.01μF	50V	±10%	1
C194	4 2239 71630	Mylar	0.01μF	50V	±10%	1
C200	4 2239 71830	Elect	10μF	50V		1
C201	4 2239 71530	Ceram	150pF	50V	±5%	1
C202	4 2239 71840	Elect	470μF	6.3V		1
C203	4 2239 71830	Elect	10μF	50V		1
C205	4 2239 71880	Elect	220μF	16V		1
R172	4 2219 71190	Carbon	1MΩ	1/6W		1
R174	4 2219 71040	Carbon	10kΩ	1/6W		1
R175	4 2219 71000	Carbon	3.3kΩ	1/6W		1
R176	4 2219 71040	Carbon	10kΩ	1/6W		1
R177	4 2219 71040	Carbon	10kΩ	1/6W		1
R178	4 2219 71140	Carbon	120kΩ	1/6W		1
R179	4 2219 71020	Carbon	6.8kΩ	1/6W		1
R180	4 2219 71230	OMF	22kΩ			1
R181	4 2219 71230	OMF	22kΩ			1
R182	4 2219 70780	Carbon	2.2Ω	1/6W		1
R183	4 2219 70890	Carbon	2.2kΩ	1/6W		1
R184	4 2219 71080	Carbon	22kΩ	1/6W		1
R188	4 2219 71080	Carbon	22kΩ	1/6W		1
R189	4 2219 71100	Carbon	33kΩ	1/6W		1
R190	4 2219 71080	Carbon	22kΩ	1/6W		1
R191	4 2219 71080	Carbon	22kΩ	1/6W		1
R192	4 2219 71080	Carbon	22kΩ	1/6W		1
R193	4 2219 71040	Carbon	10kΩ	1/6W		1
R194	4 2219 71190	Carbon	1MΩ	1/6W		1
R195	4 2219 70790	Carbon	10Ω	1/6W		1
R196	4 2219 70840	Carbon	220Ω	1/6W		1
R197	4 2219 70820	Carbon	100Ω	1/6W		1
R198	4 2219 71200	Carbon	15kΩ	1/6W		1
R199	4 2219 71200	Carbon	15kΩ	1/6W		1

Ref. No.	Part No.	Description			Q'ty
R200	4 2219 71200	Carbon	15kΩ	1/6W	1
R201	4 2219 71130	Carbon	100kΩ	1/6W	1
R202	4 2219 71130	Carbon	100kΩ	1/6W	1
R203	4 2219 71100	Carbon	33kΩ	1/6W	1
R203	4 2219 71100	Carbon	33kΩ	1/6W	1
R204	4 2219 71160	Carbon	270kΩ	1/6W	1
R205	4 2219 71070	Carbon	18kΩ	1/6W	1
R207	4 2219 71200	Carbon	15kΩ	1/6W	1
R208	4 2219 70870	Crabon	1kΩ	1/6W	1
R209	4 2219 71000	Carbon	3.3kΩ	1/6W	1
R210	4 2219 71040	Carbon	10kΩ	1/6W	1
R211	4 2219 71040	Carbon	10kΩ	1/6W	1
R212	4 2219 71090	Carbon	47kΩ	1/6W	1
R213	4 2219 71040	Carbon	10kΩ	1/6W	1
R214	4 2219 71040	Carbon	10kΩ	1/6W	1
R215	4 2219 71080	Carbon	22kΩ	1/6W	1
R216	4 2219 71040	Carbon	10kΩ	1/6W	1
R217	4 2219 71040	Carbon	10kΩ	1/6W	1
R218	4 2219 71000	Carbon	3.3kΩ	1/6W	1
R219	4 2219 70820	Carbon	100kΩ	1/6W	1
R226	4 2219 71000	Carbon	3.3kΩ	1/6W	1
R229	4 2219 71000	Carbon	3.3kΩ	1/6W	1
R230	4 2219 71100	Carbon	33kΩ	1/6W	1
R231	4 2219 71100	Carbon	33kΩ	1/6W	1
R232	4 2219 71040	Carbon	10kΩ	1/6W	1
R233	4 2219 71040	Carbon	10kΩ	1/6W	1
R234	4 2219 71010	Carbon	4.7kΩ	1/6W	1
R235	4 2219 71090	Carbon	47kΩ	1/6W	1
R236	4 2219 71010	Carbon	4.7kΩ	1/6W	1
R237	4 2219 71180	Carbon	470kΩ	1/6W	1
R238	4 2219 71180	Carbon	470kΩ	1/6W	1
R239	4 2219 71180	Carbon	470kΩ	1/6W	1
R240	4 2219 71180	Carbon	470kΩ	1/6W	1
R241	4 2219 71040	Carbon	10kΩ	1/6W	1
R243	4 2219 71200	Carbon	15kΩ	1/6W	1
R244	4 2219 71020	Carbon	6.8kΩ	1/6W	1
R245	4 2219 71230	OMF	22kΩ		1
R246	4 2219 70890	Carbon	2.2kΩ	1/6W	1
R247	4 2219 70880	Carbon	1.5kΩ	1/6W	1
R248	4 2219 71000	Carbon	3.3kΩ	1/6W	1
R249	4 2219 71080	Carbon	22kΩ	1/6W	1
R250	4 2219 71010	Carbon	4.7kΩ	1/6W	1
R251	4 2219 71130	Carbon	100kΩ	1/6W	1
R252	4 2219 71230	OMF	22kΩ		1
R253	4 2219 70870	Crabon	1kΩ	1/6W	1
R254	4 2219 70830	Carbon	150Ω	1/6W	1
R255	4 2219 71010	Carbon	4.7kΩ	1/6W	1
R258	4 2219 70870	Crabon	1kΩ	1/6W	1
R259	4 2219 70870	Crabon	1kΩ	1/6W	1
R260	4 2219 71010	Carbon	4.7kΩ	1/6W	1
R261	4 2219 71010	Carbon	4.7kΩ	1/6W	1
R263	4 2219 71050	Carbon	12kΩ	1/6W	1
R264	4 2219 70840	Carbon	220Ω	1/6W	1
R266	4 2219 71040	Carbon	10kΩ	1/6W	1
R267	4 2219 71080	Carbon	22kΩ	1/6W	1
R268	4 2219 71100	Carbon	33kΩ	1/6W	1
R269	4 2219 70870	Crabon	1kΩ	1/6W	1
R270	4 2219 70850	Carbon	470Ω	1/6W	1
R271	4 2219 70850	Carbon	470Ω	1/6W	1
R272	4 2219 71040	Carbon	10kΩ	1/6W	1
R274	4 2219 71090	Carbon	47kΩ	1/6W	1
R275	4 2219 70870	Crabon	1kΩ	1/6W	1
R276	4 2219 70890	Carbon	2.2kΩ	1/6W	1
R277	4 2219 70890	Carbon	2.2kΩ	1/6W	1

PARTS LIST (Continued)

Ref. No.	Part No.	Description	Q'ty
R278	4 2219 70890	Carbon 2.2kΩ 1/6W	1
R279	4 2219 70890	Carbon 2.2kΩ 1/6W	1
R280	4 2219 70890	Carbon 2.2kΩ 1/6W	1
R281	4 2219 71180	Carbon 470kΩ 1/6W	1
R282	4 2219 70840	Carbon 220kΩ 1/6W	1
R283	4 2219 71040	Carbon 10kΩ 1/6W	1
R284	4 2219 71010	Carbon 4.7kΩ 1/6W	1
R285	4 2219 71010	Carbon 4.7kΩ 1/6W	1
R286	4 2219 71010	Carbon 4.7kΩ 1/6W	1
R287	4 2219 71070	Carbon 18kΩ 1/6W	1
R289	4 2219 71020	Carbon 6.8kΩ 1/6W	1
R290	4 2219 71020	Carbon 6.8kΩ 1/6W	1
R301	4 2219 71020	Carbon 6.8kΩ 1/6W	1
R302	4 2219 71020	Carbon 6.8kΩ 1/6W	1
R303	4 2219 71010	Carbon 4.7kΩ 1/6W	1
R304	4 2219 71010	Carbon 4.7kΩ 1/6W	1
R305	4 2219 70820	Carbon 100Ω 1/6W	1
R306	4 2219 70820	Carbon 100Ω 1/6W	1
R307	4 2219 70900	Carbon 2.7kΩ 1/6W	1
R308	4 2219 70900	Carbon 2.7kΩ 1/6W	1
R309	4 2219 71020	Carbon 6.8kΩ 1/6W	1
R310	4 2219 71020	Carbon 6.8kΩ 1/6W	1
R311	4 2219 71020	Carbon 6.8kΩ 1/6W	1
R312	4 2219 71020	Carbon 6.8kΩ 1/6W	1
R313	4 2219 71130	Carbon 100kΩ 1/6W	1
R314	4 2219 71130	Carbon 100kΩ 1/6W	1
R315	4 2219 70870	Carbon 1kΩ 1/6W	1
R316	4 2219 70870	Carbon 1kΩ 1/6W	1
R317	4 2219 71020	Carbon 6.8kΩ 1/6W	1
R318	4 2219 71020	Carbon 6.8kΩ 1/6W	1
R319	4 2219 71040	Carbon 10kΩ 1/6W	1
R320	4 2219 71040	Carbon 10kΩ 1/6W	1
R334	4 2219 71040	Carbon 10kΩ 1/6W	1
R335	4 2219 71130	Carbon 100kΩ 1/6W	1
R336	4 2219 71130	Carbon 100kΩ 1/6W	1
R341	4 2219 70850	Carbon 470Ω 1/6W	1
R342	4 2219 70820	Carbon 100Ω 1/6W	1
R343	4 2219 71180	Carbon 470kΩ 1/6W	1
R344	4 2219 71180	Carbon 470kΩ 1/6W	1

SERVO P.C.B. ASSY

PCB2	141 0 1939 04960	Servo P.C.B. Assy	1
CN01	4 2359 77272	Conecter Assy 10P	1
CN02	4 2359 77315	Conecter Assy 6P	1
CN04	4 2359 77344	Conecter Assy 4P	1
CN11	4 2369 74630	Plug 2P	1
CN12	4 2369 74690	Plug 2P	1
CN13	4 2369 74610	Plug 4P	1
CN14	4 2369 74620	Plug 8P	1
VR102	4 2229 75120	Semi-Fixed Volume (B-100kΩ)	1
VR103	4 2229 75110	Semi-Fixed (B-10kΩ)	1
VR104	4 2229 75110	Semi-Fixed (B-10kΩ)	1
VR105	4 2229 75120	Semi-Fixed Volume (B-100kΩ)	1
VR106	4 2229 75130	Semi-Fixed Volume B-500kΩ)	1
VR107	4 2229 75110	Semi-Fixed Volume (B-10kΩ)	1
IC101	4 2069 70940	IC, NJM 4558	1
IC102	4 2069 70940	IC, NJM 4558	1
IC103	4 2069 73490	IC, STA451C	1
IC104	4 2069 73540	IC, NJM2043 S	1
IC105	4 2069 73490	IC, STA451C	1
IC106	4 2069 70940	IC, NJM 4558	1
TR103	4 2039 71740	Transistor, 2SC535 ABC	1
TR104	4 2039 71790	Transistor, 2SC3312 RST	1

Ref. No.	Part No.	Description	Q'ty
TR105	4 2039 71860	Transistor, 2SC2878	1
TR106	4 2039 71690	Transistor, 2SA1310 RST	1
TR107	4 2039 71860	Transistor, 2SC2878	1
TR108	4 2039 71860	Transistor, 2SC2878	1
TR109	4 2039 71860	Transistor, 2SC2878	1
TR110	4 2039 70430	Transistor, 2SC 1815 Y	1
TR111	4 2039 70430	Transistor, 2SC 1815 Y	1
TR112	4 2039 70680	Transistor, 2SA 1015 Y	1
C104	4 2239 71850	Elect 100μF 10V	1
C105	4 2239 71760	Mylar 0.1μF 50V ±5%	1
C106	4 2239 71760	Mylar 0.1μF 50V ±5%	1
C107	4 2239 71720	Mylar 6800pF 50V ±5%	1
C108	4 2239 71560	Ceram 680pF 50V ±10%	1
C109	4 2239 71850	Elect 100μF 10V	1
C110	4 2239 71780	Mylar 0.33μF 50V ±5%	1
C111	4 2239 71750	Mylar 0.022μF 50V ±5%	1
C112	4 2239 71810	BP 1μF 50V	1
C113	4 2239 71780	Mylar 0.33μF 50V ±5%	1
C115	4 2239 71830	Elect 10μF 50V	1
C116	4 2239 71610	Mylar 0.33μF 50V	1
C117	4 2239 71790	Mylar 0.47μF 50V ±5%	1
C145	4 2239 71550	Ceram 22pF 50V ±10%	1
C146	4 2239 72010	Mylar 4700pF 50V ±5%	1
C147	4 2239 71550	Ceram 22pF 50V ±10%	1
C195	4 2239 71860	Elect 47μF 16V	1
C196	4 2239 71860	Elect 47μF 16V	1
C197	4 2239 71700	Mylar 1800pF 50V ±5%	1
C198	4 2239 71700	Mylar 1800pF 50V ±5%	1
R104	4 2219 71040	Carbon 10kΩ 1/6W	1
R105	4 2219 70900	Carbon 2.7kΩ 1/6W	1
R106	4 2219 70880	Carbon 1.5kΩ 1/6W	1
R107	4 2219 70880	Carbon 1.5kΩ 1/6W	1
R108	4 2219 71080	Carbon 22kΩ 1/6W	1
R109	4 2219 71110	Carbon 33kΩ 1/6W	1
R110	4 2219 71100	Carbon 33kΩ 1/6W	1
R111	4 2219 71100	Carbon 33kΩ 1/6W	1
R112	4 2219 70890	Carbon 2.2kΩ 1/6W	1
R113	4 2219 71080	Carbon 22kΩ 1/6W	1
R115	4 2219 70870	Crabon 1kΩ 1/6W	1
R116	4 2219 70860	Carbon 820Ω 1/6W	1
R117	4 2219 71090	Carbon 47kΩ 1/6W	1
R118	4 2219 71000	Carbon 3.3kΩ 1/6W	1
R119	4 2219 71200	Carbon 15kΩ 1/6W	1
R120	4 2219 71040	Carbon 10kΩ 1/6W	1
R121	4 2219 70870	Crabon 1kΩ 1/6W	1
R122	4 2219 70890	Carbon 2.2kΩ 1/6W	1
R123	4 2219 71090	Carbon 47kΩ 1/6W	1
R124	4 2219 70800	Carbon 22Ω 1/6W	1
R125	4 2219 71170	Carbon 33kΩ 1/6W	1
R126	4 2219 71030	Carbon 8.2kΩ 1/6W	1
R127	4 2219 70810	Carbon 1.8kΩ 1/6W	1
R128	4 2219 71130	Carbon 100kΩ 1/6W	1
R129	4 2219 71100	Carbon 33kΩ 1/6W	1
R130	4 2219 70780	Carbon 2.2kΩ 1/6W	1
R131	4 2219 70780	Carbon 2.2kΩ 1/6W	1
R132	4 2219 70780	Carbon 2.2kΩ 1/6W	1
R133	4 2219 71050	Carbon 12kΩ 1/6W	1
R134	4 2219 71220	Carbon 390Ω 1/6W	1
R135	4 2219 70790	Carbon 10Ω 1/6W	1
R136	4 2219 70860	Carbon 820Ω 1/6W	1
R137	4 2219 71050	Carbon 12kΩ 1/6W	1
R138	4 2219 70860	Carbon 820Ω 1/6W	1
R139	4 2219 71050	Carbon 12kΩ 1/6W	1
R140	4 2219 70790	Carbon 10Ω 1/6W	1

PARTS LIST (Continued)

Ref. No.	Part No.	Description			Q'ty
R141	4 2219 71220	Carbon	390Ω	1/6W	1
R142	4 2219 71050	Carbon	12kΩ	1/6W	1
R143	4 2219 70780	Carbon	2.2kΩ	1/6W	1
R144	4 2219 71000	Carbon	3.3kΩ	1/6W	1
R145	4 2219 71040	Carbon	10kΩ	1/6W	1
R146	4 2219 70810	Carbon	1.8kΩ	1/6W	1
R147	4 2219 70840	Carbon	220Ω	1/6W	1
R148	4 2219 71080	Carbon	22kΩ	1/6W	1
R149	4 2219 71080	Carbon	22kΩ	1/6W	1
R150	4 2219 71150	Carbon	220kΩ	1/6W	1
R151	4 2219 71150	Carbon	220kΩ	1/6W	1
R152	4 2219 71130	Carbon	100kΩ	1/6W	1
R153	4 2219 71130	Carbon	100kΩ	1/6W	1
R154	4 2219 70830	Carbon	150Ω	1/6W	1
R155	4 2219 71200	Carbon	15kΩ	1/6W	1
R156	4 2219 71210	Carbon	2.2MΩ	1/6W	1
R157	4 2219 71040	Carbon	10kΩ	1/6W	1
R158	4 2219 71000	Carbon	3.3kΩ	1/6W	1
R159	4 2219 71140	Carbon	120kΩ	1/6W	1
R160	4 2219 70890	Carbon	2.2kΩ	1/6W	1
R161	4 2219 71120	Carbon	39kΩ	1/6W	1
R162	4 2219 71150	Carbon	220kΩ	1/6W	1
R163	4 2219 71020	Carbon	6.8kΩ	1/6W	1
R164	4 2219 71140	Carbon	120kΩ	1/6W	1
R165	4 2219 71120	Carbon	39kΩ	1/6W	1
R166	4 2219 71120	Carbon	39kΩ	1/6W	1
R167	4 2219 71040	Carbon	10kΩ	1/6W	1
R168	4 2219 71040	Carbon	10kΩ	1/6W	1
R169	4 2219 71040	Carbon	10kΩ	1/6W	1
R170	4 2219 71040	Carbon	10kΩ	1/6W	1
R171	4 2219 70890	Carbon	2.2kΩ	1/6W	1
R173	4 2219 71130	Carbon	100kΩ	1/6W	1
R185	4 2219 70890	Carbon	2.2kΩ	1/6W	1
R186	4 2219 70890	Carbon	2.2kΩ	1/6W	1
R187	4 2219 71040	Carbon	10kΩ	1/6W	1
R256	4 2219 71090	Carbon	47kΩ	1/6W	1
R288	4 2219 70800	Carbon	22Ω	1/6W	1

DISPLAY P.C.B. ASSY

PCB3	141 0 1939 04970	Display P.C.B. Assy	1
CN08	4 2359 77314	Conecter Assy 6P	1
CN09	4 2359 77365	Conecter Assy 3P	1
CN10	4 2359 77271	Conecter Assy 10P	1
SW104	4 2319 77120	Switch Tact EVQ-QSV-04M	1
SW105	4 2319 77120	Switch Tact EVQ-QSV-04M	1
SW106	4 2319 77120	Switch Tact EVQ-QSV-04M	1
SW107	4 2319 77120	Switch Tact EVQ-QSV-04M	1
SW108	4 2319 77120	Switch Tact EVQ-QSV-04M	1
SW109	4 2319 77120	Switch Tact EVQ-QSV-04M	1
SW110	4 2319 77120	Switch Tact EVQ-QSV-04M	1
SW111	4 2319 77120	Switch Tact EVQ-QSV-04M	1
SW113	4 2319 77120	Switch Tact EVQ-QSV-04M	1
SW114	4 2319 77120	Switch Tact EVQ-QSV-04M	1
SW115	4 2319 77120	Switch Tact EVQ-QSV-04M	1
IC119	4 2069 73510	IC, LB1274	1
IC120	4 2069 73520	IC, M54562P	1
D125	4 2029 73350	Diode, 1S133	1
D126	4 2029 73350	Diode, 1S133	1
D127	4 2029 73350	Diode, 1S133	1
D128	4 2029 73350	Diode, 1S133	1
D129	4 2029 73350	Diode, 1S133	1
D130	4 2029 73350	Diode, 1S133	1
D131	4 5119 70830	Displayunit	1

Ref. No.	Part No.	Description			Q'ty
R321	4 2219 71130	Carbon	100kΩ	1/6W	1
R322	4 2219 70840	Carbon	220Ω	1/6W	1
R323	4 2219 70840	Carbon	220Ω	1/6W	1
R324	4 2219 70790	Carbon	10Ω	1/6W	1
R325	4 2219 70790	Carbon	10Ω	1/6W	1
R326	4 2219 70820	Carbon	100Ω	1/6W	1
R327	4 2219 70820	Carbon	100Ω	1/6W	1
R328	4 2219 70820	Carbon	100Ω	1/6W	1
R329	4 2219 70820	Carbon	100Ω	1/6W	1
R330	4 2219 70820	Carbon	100Ω	1/6W	1
R331	4 2219 70820	Carbon	100Ω	1/6W	1
R332	4 2219 70820	Carbon	100Ω	1/6W	1
R337	4 2219 71130	Carbon	100kΩ	1/6W	1
R338	4 2219 71130	Carbon	100kΩ	1/6W	1

AUTO LASER CONTROL P.C.B. ASSY

PCB4	141 0 1939 04980	Auto Laser Control P.C.B. Assy			1
CN15	4 2369 74600	Plug 2P			1
CN16	4 2369 74680	Pulg 3P			1
C101	4 2239 71850	Elect	100μF	10V	1
C102	4 2239 71850	Elect	100μF	10V	1
C103	4 2239 71850	Elect	100μF	10V	1
VR101	4 2229 75100	Semi-Fixed Volume (B-20kΩ)			1
TR101	4 2039 70680	Transistor, 2SA 1015			1
TR102	4 2039 71880	Transistor, 2SC2673			1
D101	4 2029 73320	LED, LTZ-R17			1
R101	4 2219 70890	Carbon	2.2kΩ	1/6W	1
R102	4 2219 70870	Crabon	1kΩ	1/6W	1
R103	4 2219 70790	Carbon	10Ω	1/6W	1

LED P.C.B. ASSY

PCB5	141 0 1939 04990	LED P.C.B. Assy	1
CN07	4 2359 77467	Conecter Assy 2P	1
D124	4 2029 73310	LED, SLR55URC3H (Disk Set)	1

LOAD RIMIT SWITCH P.C.B. ASSY

PCB6	141 0 1939 05000	Load Rimit Switch P.C.B. Assy	1
CN05	4 2359 77364	Conector Assy 3P	1
SW102	4 2319 77140	Switch Rimit SCL 101T (Loading Limit)	1

FEED START SWITCH P.C.B. ASSY

PCB7	141 0 1939 05010	Feed Start Switch P.C.B. Assy	1
CN11	4 2359 77466	Conecter Assy 2P	1
SW101	4 2319 77150	Switch End Msw-1485 (Feed Start)	1

LOAD MOTOR P.C.B. ASSY

PCB8	141 0 1939 05020	Load Motor P.C.B. Assy	1
CN06	4 2359 77467	Conecter Assy 2P	1

SAFETY INTERLOCK

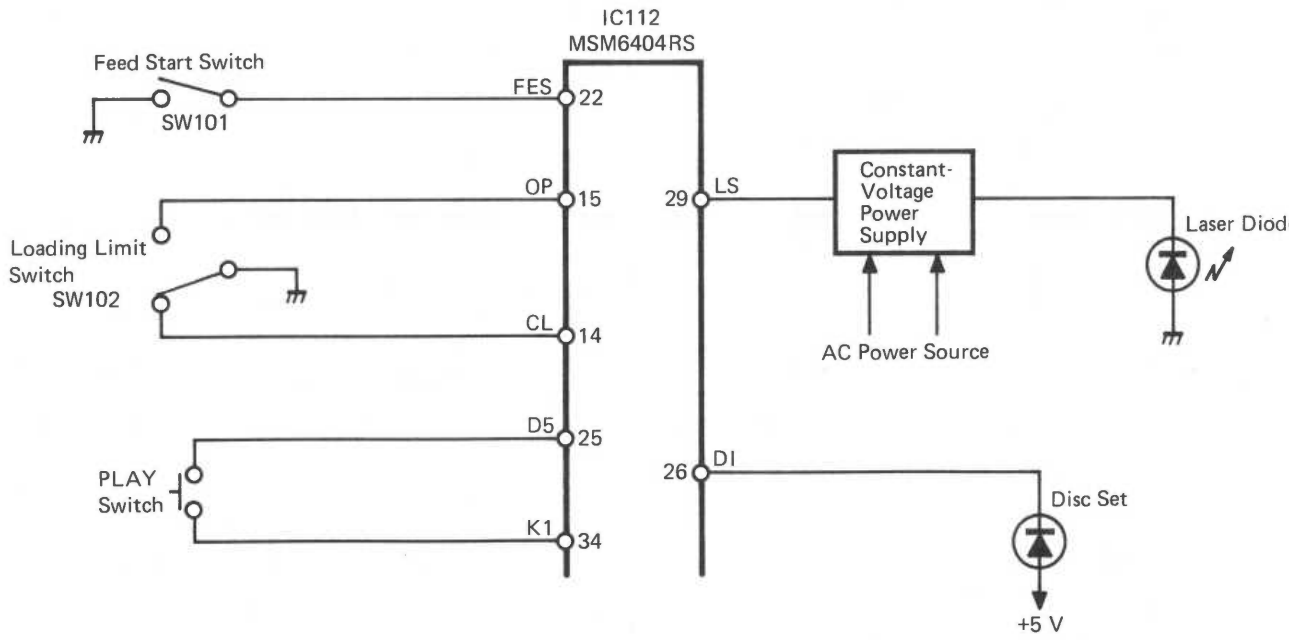
The Digital Compact Disc Player reads the disc signals by detecting the laser beam. It must be avoided for the human body to directly receive the beam. Especially human eyes are badly affected by the beam. Therefore, the unit is equipped with a safety interlock to prevent the unnecessary laser outputs.

The laser outputs are controlled by the injection or cutoff of the constant voltage source to the laser diode with Pin 29 (LS) of IC112 (MSM6404RS). When Pin 29 is in "H" (High) level, the laser emits the beam. When Pin 29 is in "L" (Low) level, the laser does not emit the beam.
Pin 29 is set in "H" level when the unit is loaded with the disc and it reads the index signals or when the unit is set in the play mode after that. When the unit reads the index signals and the following two conditions are met, the laser emits the beam.

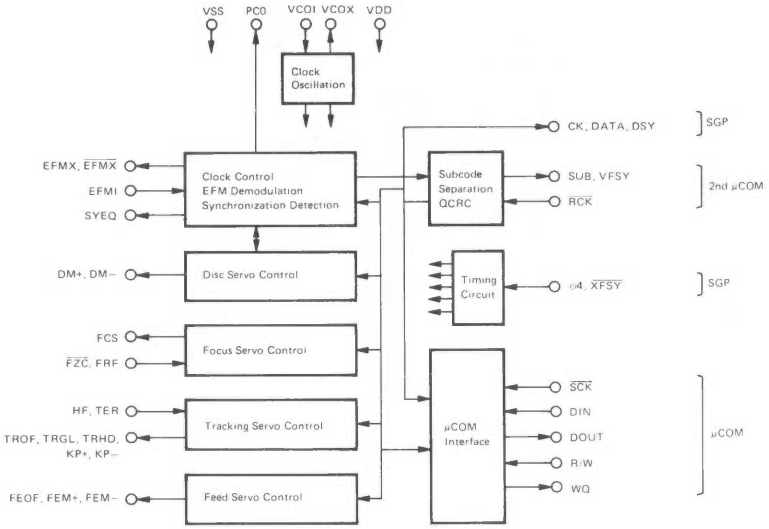
1) when the Loading Limit Switch (SW102) is set in "CL" side. (The disc tray is closed.)
2) when the Feed Start Switch is in "OPEN" mode. (The pickup is located at the area of the minimum internal circumference.)

After the above conditions are met and the index signals have been read, the laser emits the beam when the following two conditions are met.

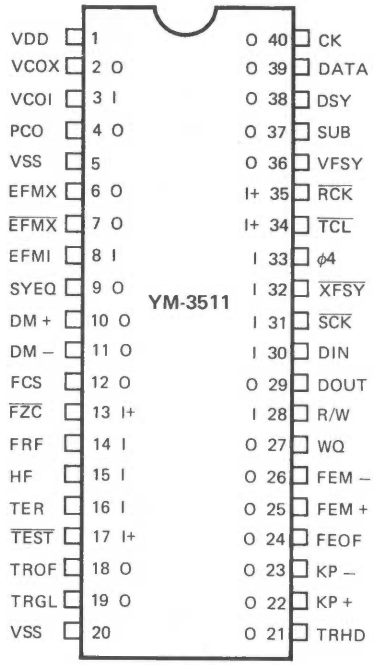
1) when the PLAY button is pressed.
2) when the DISC SET indicator LED is ON or flashing.



YM3511



TOP VIEW



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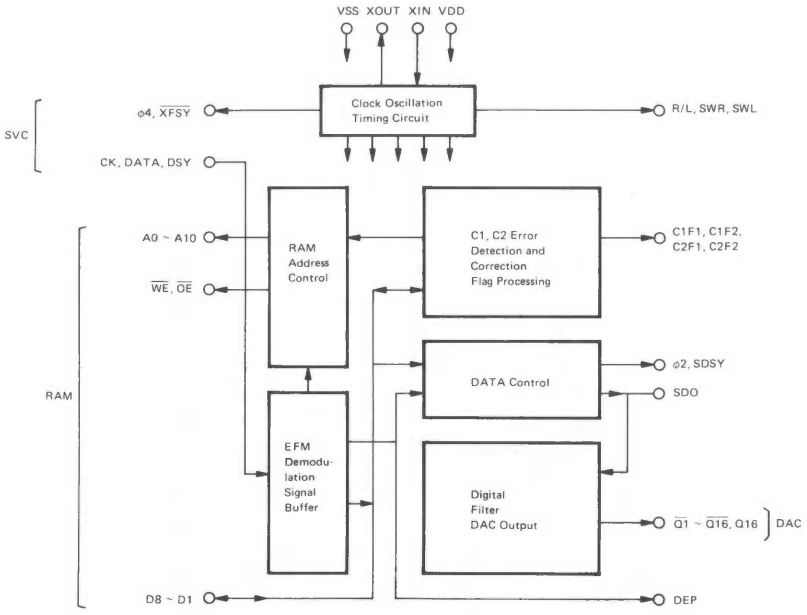
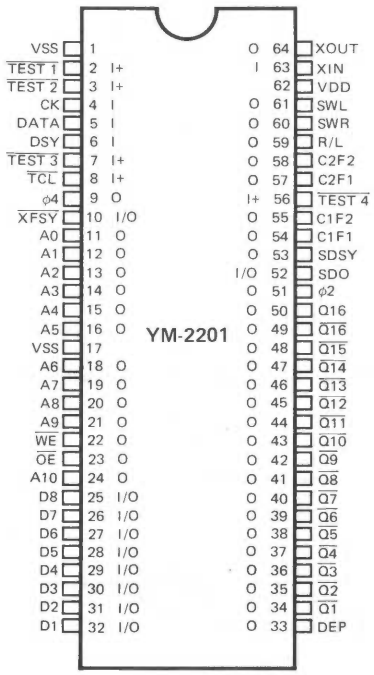
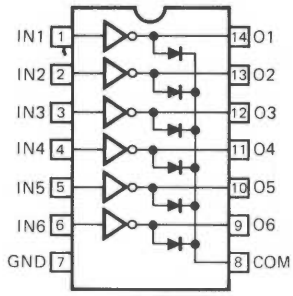


TOP VIEW



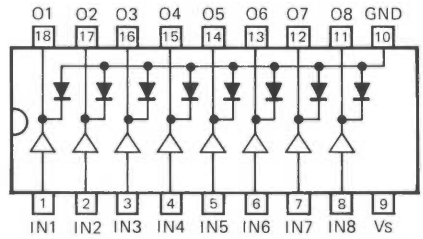
LB1274

TOP VIEW



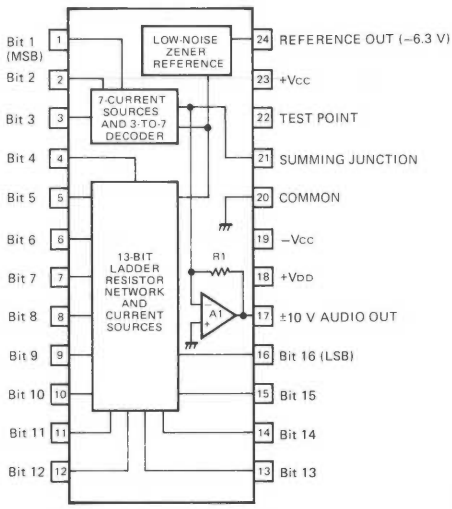
M54562P

TOP VIEW

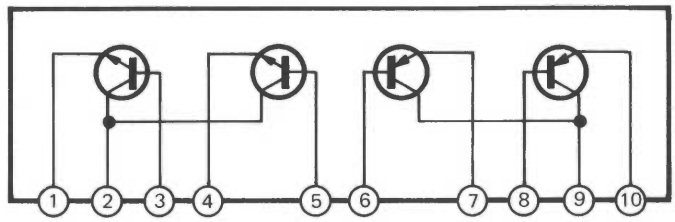


PCM53JP-V

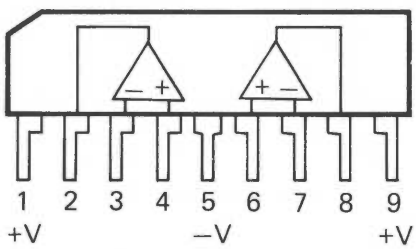
TOP VIEW



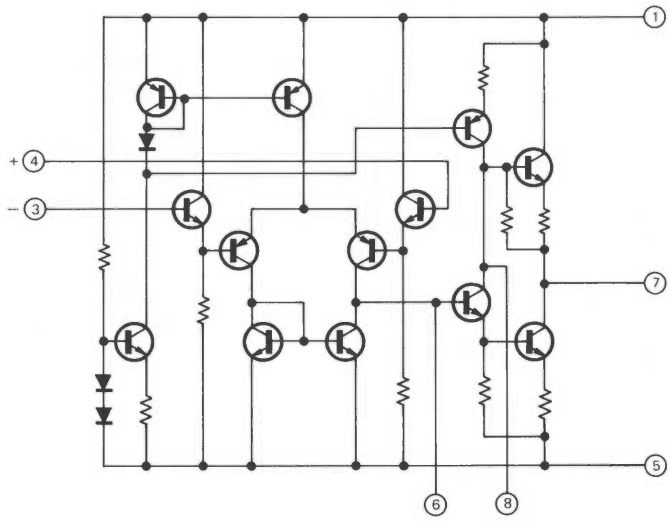
STA451C



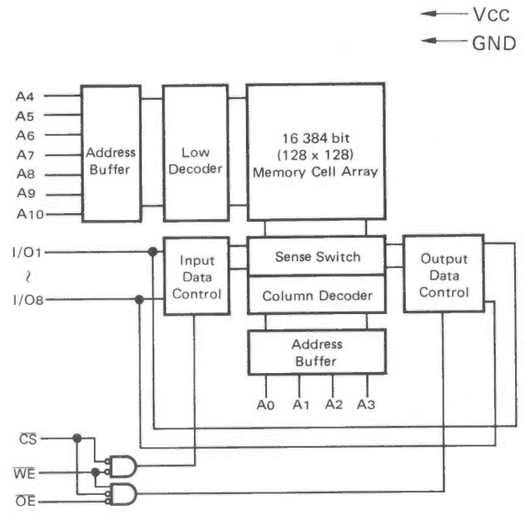
NJM2043, NJM4558, AN6557



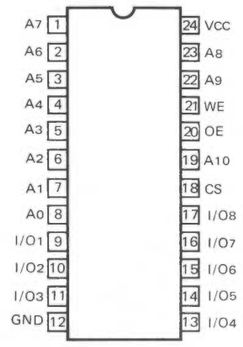
LA3170



μPD4016

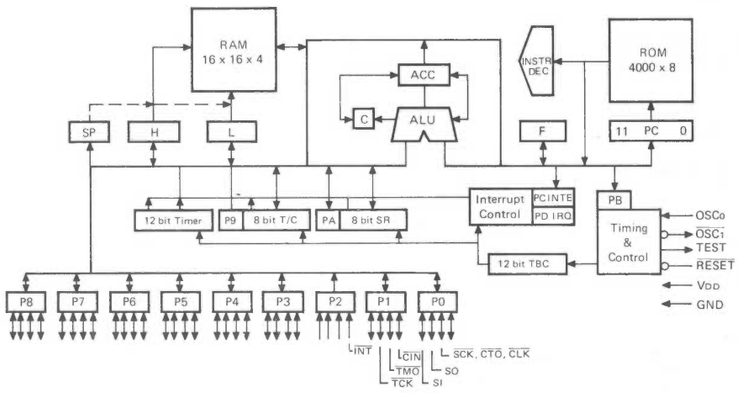


TOP VIEW

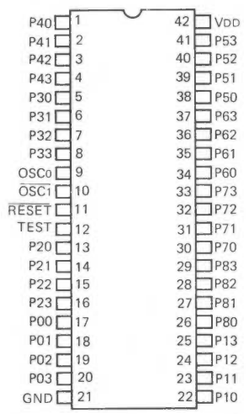


A0 ~ A10 : Address Input
I/O1 ~I/O8 : Data I/O Chip Select
$\overline{CS}$: Chip Select Input
$\overline{WE}$: Write Enable Input
$\overline{OE}$: Output Enable Input
Vcc : +5 V Power Source
GND : Ground

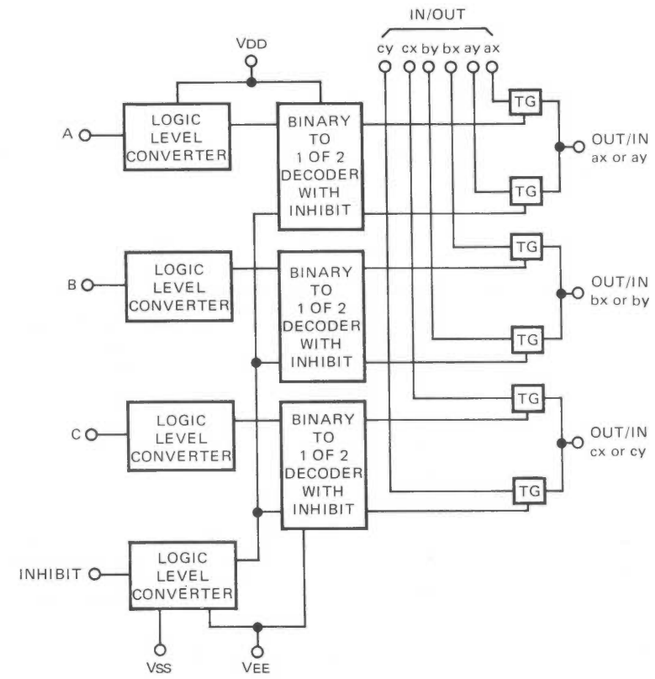
MSM6404RS



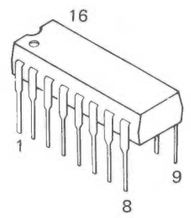
TOP VIEW



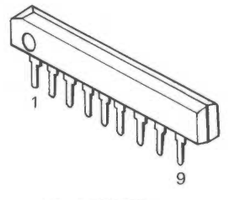
MN4053



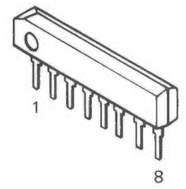
INTEGRATED CIRCUIT



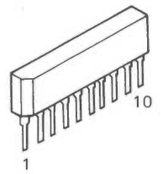
- MN4053



- AN6557
- NJM2043
- NJM4558



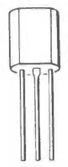
- LA3170



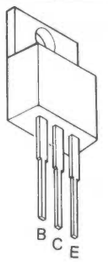
- STA451C

TRANSISTORS

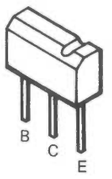
- 2SA1015
- 2SA1310
- 2SC1815
- 2SC2878
- 2SC3312
- 2SC535



- 2SB544
- 2SC3225
- 2SD400



- 2SB566

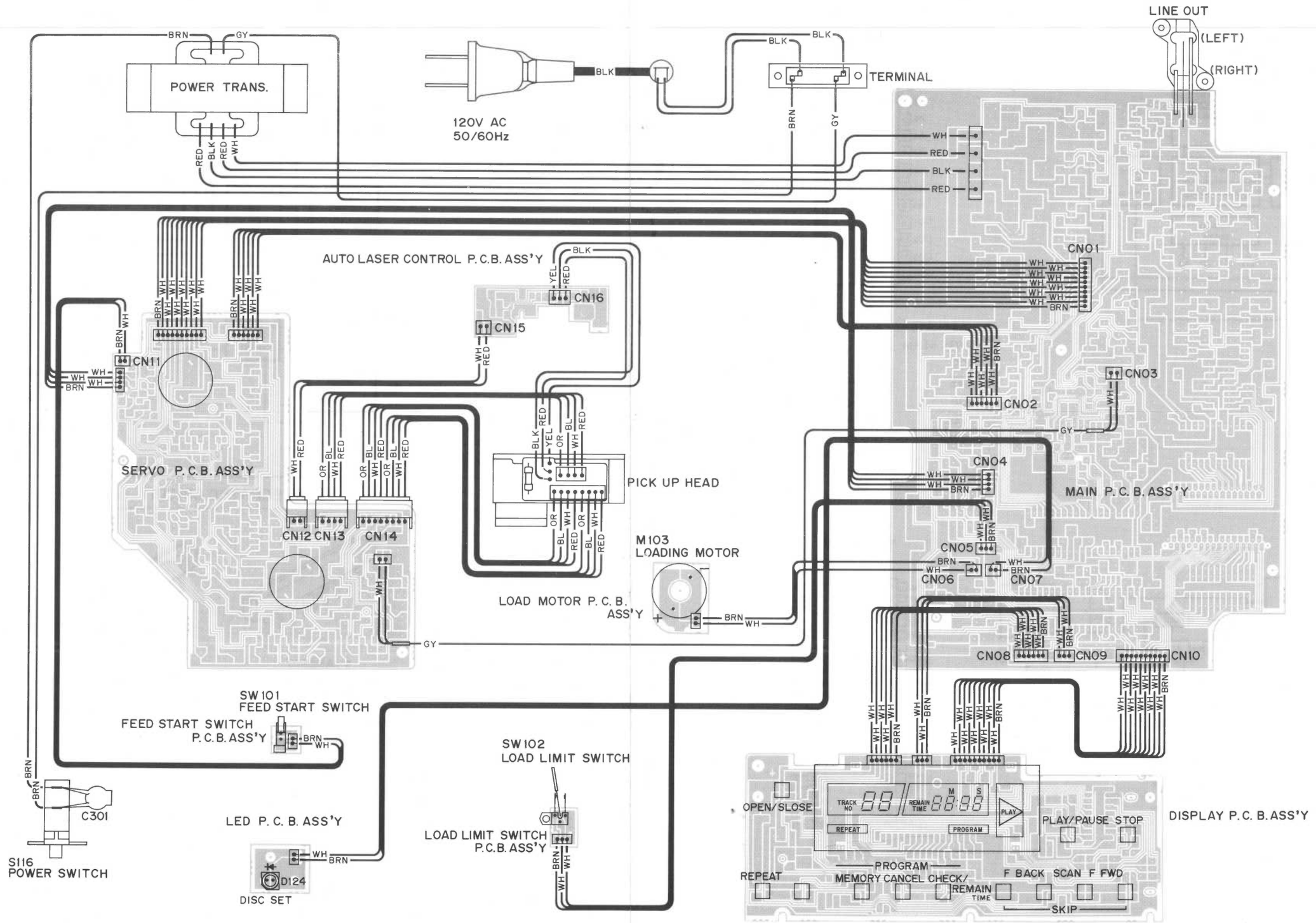


- 2SC2673

DIODES

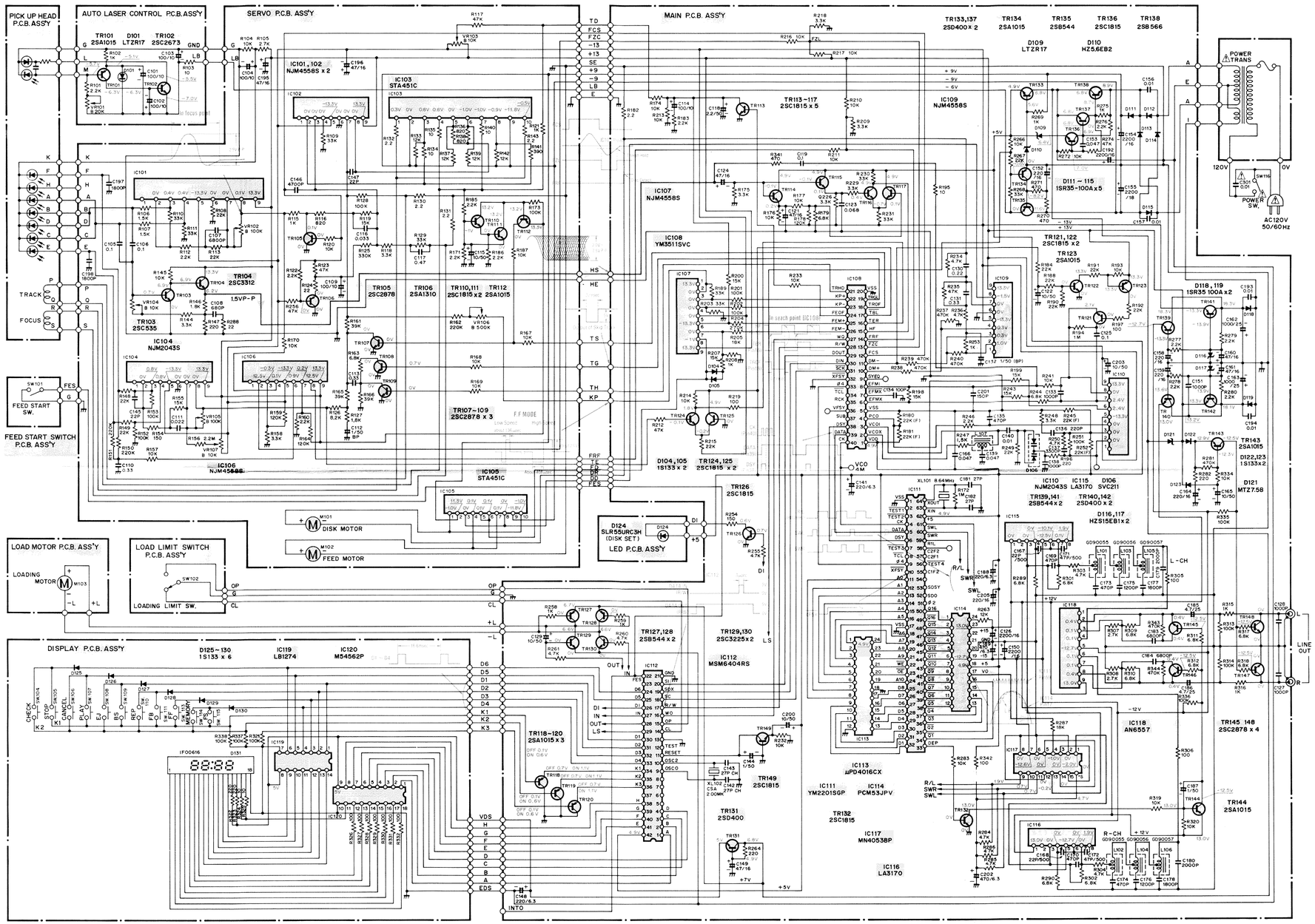
- 1S133
- 1SR35
- HTZ7.5B
- HZ5.6EB2
- HZS15EBI
- SVC211

POINT TO POINT WIRING DIAGRAM



MEMO

SCHEMATIC DIAGRAM



No.	Name	Position	No.	Name	Position
SW101	FEED START SWITCH	OFF	SW109	F BACK SKIP SWITCH	OFF
SW102	LOADING LIMIT SWITCH	CLOSE	SW110	REPEAT SWITCH	OFF
SW104	CHECK SWITCH	OFF	SW111	F BACK SCAN SWITCH	OFF
SW105	STOP SWITCH	OFF	SW113	F.FWD SCAN SWITCH	OFF
SW106	CANCEL SWITCH	OFF	SW114	MEMORY SWITCH	OFF
SW107	PLAY/PAUSE SWITCH	OFF	SW115	F.FWD SKIP SWITCH	OFF
SW108	OPEN/CLOSE SWITCH	OFF	SW116	POWER SWITCH	OFF

NOTES:

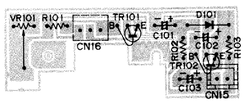
1. All resistors values are indicated in "ohm" (K=10^3, M=10^6).
2. All capacitors values are indicated in "μF" (P=10^{-12})
3. All voltages indicated on the schematics are measured under the following conditions.
   a. Use a multimeter.
   b. All voltages ±10% with respect to chassis ground
   c. Voltages in PLAY mode
   d. AC input at 120 volts 60 Hz
   e. The wave forms in each section, which appear when a general music disc is used, are shown here.
4. This is a basic schematic diagram.

Because Fisher products are subject to continuous improvement, Fisher Corporation reserves the right to make any changes or modifications without notice.

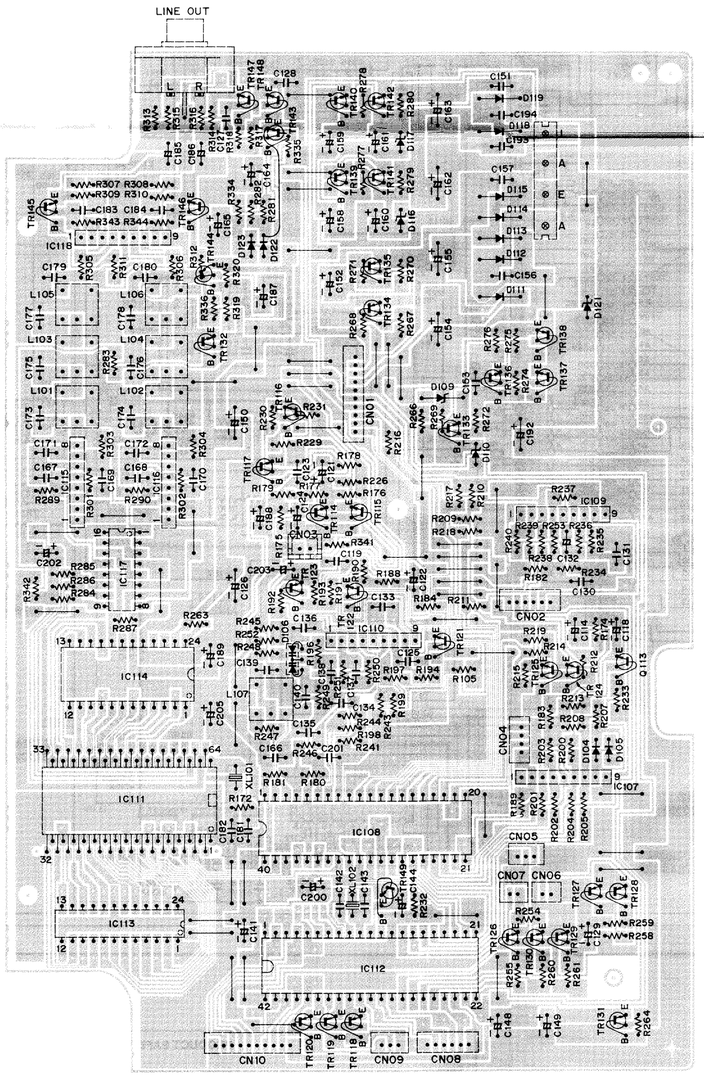
PRODUCT SAFETY NOTICE

Each precaution in this manual should be followed during servicing. Components identified with the IEC symbol ⚠ in the parts list and the schematic diagram designate components in which safety can be of special significance. When replacing a component identified with ⚠, use only the replacement parts designated, or parts with the same ratings of resistance, wattage or voltage that are designated in the parts list in this manual.
Leakage-current or resistance measurements must be made to determine that exposed parts are acceptably insulated from the supply circuit before returning the product to the customer.

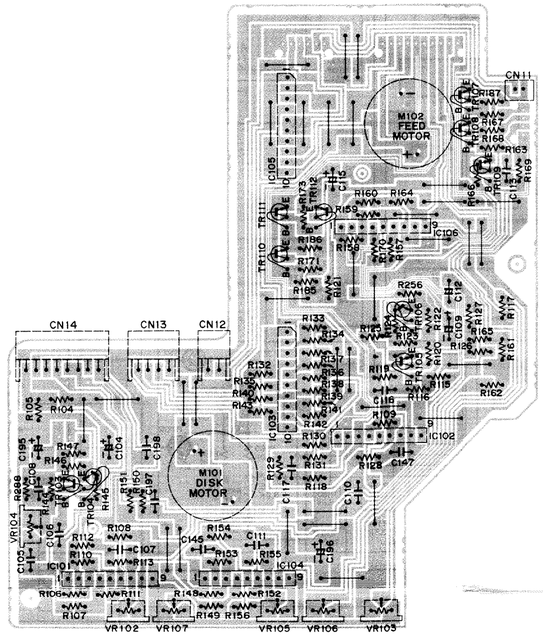
AUTO LASER CONTROL P.C.BOARD
(BOTTOM VIEW)



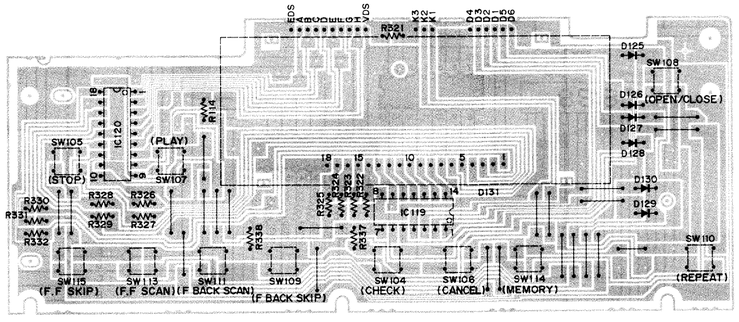
MAIN P.C.BOARD
(BOTTOM VIEW)

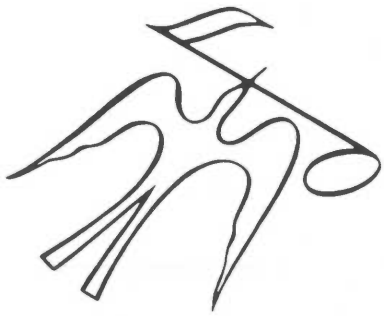


SERVO P.C.BOARD
(BOTTOM VIEW)



DISPLAY P.C.BOARD
(BOTTOM VIEW)





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Studio-Standard

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PRINTED IN JAPAN '84/Mar. **WM-11372**

PRODUCTION CHANGE NOTICE

FISHER®

Digital Compact Disc Player

AD-840
U.S.A.

137 302 20 (Silver)
137 302 21 (Black)

Date: July, 8, 1985

The following corrections should be made in the SERVICE MANUALS and PARTS (PRICE) LIST.

Section: MAIN P.C.B. ASSY

Ref. No.	Description	Non-modified Part No.	Post-modified Part No.	Q'ty	Remark	Reason
IC107 IC109	IC, NJM4558	4-2069-70940	4-2069-74710	1		E

Section: SERVO P.C.B. ASSY

Ref. No.	Description	Non-modified Part No.	Post-modified Part No.	Q'ty	Remark	Reason
IC101 IC102 IC106	IC, NJM4558	4-2069-70940	4-2069-74710	1		E

INTERCHANGEABLE NOT INTERCHANGEABLE	Serial No.	Effective from
Q'ty of initial production before modification	Identification of modified unit.	

REASON FOR MODIFICATION
A: ..... Standardization **C:** ..... Improvement of reliability **E:** ..... Misprint **G:** .....
B: ..... Change of materials **D:** ..... Improvement of performance **F:** ..... Registration

WM-15643N

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